RAILROAD GAZETTE

FRIDAY, SEPTEMBER 18, 1896.

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Contributions.

Mr. Bryan as a Railroad Manager.

SEPT. 11, 1896.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The Chicago platform declares for (*a*) government ownership of railroads (*b*) no life tenure of office. How would this affect railroad employees? Mr. Bryan says he favors every plank in the platform.

"PROMOTION."

[The question answers itself: Tenure, from the executive office to the gravel train, through one administration only. The platform is a bill to discourage the performance of duty, as well as to paralyze trade and the administration of justice.—EDITOR RAILROAD GAZETTE.]

A Plea for the Silver Miner.

EDGERTON, Col., Aug. 24, 1896.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In reply to Andrew Marcellus, Aug. 21, you acknowledge that a silver dollar will be a legal tender under a free-coinage act and readily pass at 100 cents; nevertheless you insist that its value would be only 53 cents. Why did you not add the words "as measured by foreign bankers" for whom the American workman cares nothing? (1). Again you say, "As Mr. Smith (the silver miner) is very active he will undoubtedly find a way to make a good deal of money out of this difference between the bullion value and coining value of silver." You are no doubt aware that many silver mines are closed because they cannot be operated at a profit with the price of silver at less than $1.29 per ounce, just as some gold mines would close if the price of gold dropped below $20 per ounce. On the other hand there are instances of gold being mined at a cost of less than $1 per ounce. In either case the mine will not be worked unless it yields its owner a profit. Supposing this to be true will you kindly state what difference it makes to the American workman whether Mr. Smith (the silver miner) makes a profit of 75 cents per ounce on silver or Mr. Brown (the gold miner) makes a profit of $19 on his ounce of gold, the one having a monopoly of one and the other a monopoly of the other metal? (2).

In depicting the lions we will find in our path under a free coinage act, you say, "Silver will flow to our mints from all over the world." As our mints do not coin foreign money, the inference is that it is to be exchanged for gold at the option of American bankers (the U. S. treasury will not make the exchange now nor, probably, in the future), or exchanged for the products of American labor if the American workman so elect; therefore is it not a fact that whatever flow of silver takes place will yield a profit to the American at whose choice the exchange is made? (3). If any outflow of gold takes place, will it not be governed by the following conditions: As a speculation, in which the American owner sees a profit; or to pay debts, the cancellation of which can be made only in gold no matter what party is placed in power at the next election? (4).

All will agree that questions so important "should be discussed without exaggeration and without excitement," especially in a staid journal like the *Railroad Gazette;* and the writer begs to suggest that unsupported assertions or products of the imagination as the following, for instance: "There will be a rise (in the price of silver) for a short time, and then the price will begin to drop and people will discover that silver can purchase in the market no more than what it is worth as bullion, even when the stamp of the United States is put upon it, and even if we add the motto, In God we trust," might be accepted as legitimate argument before a gang of gravel-train Italians, but to men whose minds are as well trained in logic as are the readers of this paper, absolute and naked facts would more acceptable (5).

JERRY SULLIVAN.

[(1) Whether coined or uncoined, 412½ grains of silver under a free-coinage law, has the same value, whether measured by a foreign banker or by an American workman.

(2) The "American workman" is not directly concerned in the amount of profit made by Mr. Brown, the gold miner, or by Mr. Smith, the silver miner, provided Mr. Smith and Mr. Brown mind their own business. The trouble is that the Smiths, the silver miners, demand a law under which the American workman must accept as wages dollars which will buy only 53 cents' worth of food and clothes.

(3) No distinction between foreign and domestic gold or silver is now made at our mints; neither is such a distinction proposed by the free-coinage advocates.

(4) The conditions governing the export and import of gold are evidently only slightly appreciated by Mr. Sullivan. It is true that no matter whether at the next election theorists, or knaves, or men of probity are placed in power, all our dealings with all civilized countries will continue to be made on a gold basis. For instance:—We have among the railroad officers in Mexico a large number of subscribers to the *Railroad Gazette*, who send to us annually a draft on New York for $4.20, together with a voucher for our signature made as follows:

To subscription to the *Railroad Gazette* for the year ending August 31, 1897	$4.20
Premium	3.68
Total	$7.88

The premium which the Mexican pays varies in different vouchers. The above is an exact copy of a recent one.

(5) The *Railroad Gazette* has made no such "unsupported assertion," as a reading of the context to Mr. Sullivan's partial quotation will clearly show. Moreover, Jerry, who poses as a workingman, should not cast a slur on the gravel-train gang. He is too aristocratic.—EDITOR RAILROAD GAZETTE.]

A Demand for the Monetization of Paper.

CLEVELAND, Sept. 1, 1896.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the *Railroad Gazette* of Aug. 28, under the heading "Remonetization of Iron," Mr. John R. Slack takes occasion to poke fun at my statement that under free coinage by the United States government, silver bullion will not sell for less than $1.29 per ounce, and says: "If this is true how much better it would be to use instead of silver, some metal which we can obtain still more plentifully—say a good quality of No. 1 foundry pig iron." This criticism is disappointing; I am a student of economic questions, therefore hoped that my argument might be refuted, and that I would be driven to an acknowledgment of my error. I am disappointed that a critic so able should not in a few words make it plain to his railroad brothers that the proposition to restore silver to its constitutional rights as a money metal is sophism.

But may I please say to our good friend that being a native-born American citizen I have implicit faith in this great republic. I love its grand institutions. I believe in and worship that greatest of all productions of man, the Declaration of Independence. I have faith in the American people to do right. I believe this government is made by the people and for the people, and that it is the best, the greatest and strongest power on the earth to-day. Feeling thus, I have not the remotest doubt but that if the wise framers of our Constitution had declared in that instrument of our liberties that nothing but pig iron should be coined into money, or be made legal tender in payment of debts between our people that the republic would not have perished, but that it would have survived and prospered, as it did survive and prosper when a less valuable article, paper, was made legal tender, as a "military necessity," during the rebellion. Our friend may recall the dark days between 1861 and 1864, when our patriots almost despaired; how in those darkest days, in our direst distress gold deserted us and became our most formidable enemy, and how our greenback paper money with *only one-half of our country behind it*, bought supplies for 1,000,000 soldiers and saved the Union?

If paper money in time of war and uncertainty, with only one-half of the United States supporting it, was so potent, can we doubt the power of a united country to make both gold and silver in time of peace, do justice between our people as a money and be maintained at a parity such as the United States may establish.

What we want to-day is something that will start the circulation in the arteries of commerce. Thousands of cars are rotting on side tracks, and a large percentage of the mileage in the United States is operated by receivers under the jurisdiction of United States courts. Our domestic trade is lifeless; the prices of our agricultural products are fixed by foreign countries, which have been forced so low that nothing is produced above cost and our farmers cannot buy. Our manufacturers have labored against a declining market for years. What they manufactured to-day would sell to-morrow at a lower price. Our merchants are disheartened after a long-continued period of selling on a declining market. Our wise friends have assured us time and again that prosperity was but a little way off, but only deeper distress followed their assurances. The single gold standard has finally brought ruin and misery to our people. Shall it continue?

Is there a remedy? Yes. We need more money in the avenues of commerce that cannot be manipulated by speculators. We need more trade with foreign nations Let the United States restore silver to its former constitutional place as a monetary metal on the basis of 16 to 1. This will promptly compel England and other gold-standard countries of Europe to adopt the double standard for self protection. If these countries did not adopt it the United States would take all the trade of the South American countries, of the silver countries of Asia and Mexico. We would take it because we would receive their money at par, while Europe only receives it at 50 cents on the dollar. Europe would lose the power to fix the value of the world's products and the world's debts, just as soon as she lost the power to fix the value of the money of the country from which she purchases at one price and the value of her money at another. Values on all agricultural products would rise as soon as the premium on exchange between producing countries and the consuming countries was wiped out. Think you that gold would leave this country under such conditions? Gold and silver coinage to, say, the full capacity of our mints, about $90,000,000 per annum would be no greater than our increasing population demanded. Business would take on new life; farmers and manufacturers would receive a margin above cost of production; people would be employed steadily, and prosperity would bless our nation.

ANDREW MARCELLUS.

[Our correspondent shall not be disappointed in his desire for a few words to make it plain that "the proposition to restore silver to its constitutional rights as a money metal is a sophism." A firm grip on the fact that the constitution never conferred or alluded to such rights will make the sophistry plain. The only remaining basis for this somewhat flamboyant outbreak appears to be the assumption that "a less valuable article, paper, was made legal tender" in "the dark days"—which is untrue. The promises of this nation (printed on paper) have thus far been honorably fulfilled, but our correspondent is advocating partial repudiation and a destruction of that credit which has more than once saved the nation. There is ground for the suspicion that this correspondent is not a free-silver man, that he is purposely writing weakly on the wrong side and that he is really a believer in honorable fulfillment. The admission that pig iron or paper would serve as legal tender would cause the silver-mine owners to exclaim as did the Italian street vender of toy balloons when the string slipped from his finger and all his stock in trade rose in the summer air: "There goes all my business up."—EDITOR RAILROAD GAZETTE.]

Silver as Collateral.

TO THE EDITOR OF THE RAILROAD GAZETTE:

During the past 20 years the world's production of silver has advanced from something like 60 million to 170 million ounces per annum, and this enormously increased production is maintained largely, almost entirely, upon subsidiary coinage (small currency), coinage in partially civilized countries and the demand in the arts. The price of silver during this period has fallen from $1.25 to 66 cents an ounce, but the volume of the production and the wealth accumulated by those engaged in the business indicate very clearly that the present price affords a fair business profit. Silver is produced under favorable conditions with modern machinery and methods at a cost of not exceeding 30 cents an ounce.

These being facts, the people of the United States are asked to buy the entire silver product of the world, paying for it nearly double the present market price, at which price a fair return may be secured from the business of mining in reasonable quantities. I say the people of the United States are asked to *buy* the entire silver product of the world, and all the accumulation to this date, for it is a well-known fact that silver dollars will not circulate as money in any considerable volume. Their inconvenient weight and size forbid it. This fact is clearly recognized by the silver people and by their "Boy orator," who in the paper read by him in New York said:

"The argument that a silver dollar is heavier than a gold dollar, and that therefore, silver is less convenient to carry in large quantities is completely answered by the silver certificates which are as easily carried as the gold certificate or any other kind of paper money."

The ultimate intention of the Populist-Silver-un-Democratic party, therefore is not, and cannot be, to actually coin all of the world's silver into dollars at the United States mints, but it is that the people of the United States, acting through its Treasury Department, shall buy all of the silver produced in the world at double its commercial value, provide warehouses in which to hold it in store and issue against it warehouse certificates; and the people are to be required by law to accept these warehouse certificates as currency on a basis having no fixed or fair relation to the actual commercial value of the silver they represent.

If the United States is to issue paper currency it can be issued in *limited* volume, on the credit of the nation,

far more safely than it can be issued in *unlimited* volume on the credit of a mass of stored silver having no reliable commercial value in the vast volume in which it would accumulate in the United States warehouses where it would be stored. If the nation needs collateral to insure the ultimate payment or the stable value of its paper currency, let it be collateral having a commercial market value based upon a varied use and demand, and not a collateral for which there is no possible use in large quantity.

Suppose the people of the United States to be so crazed for the moment or so unintelligent as to consent to this proposition of the silver owners, their agents and representatives, that money of the United States shall be given in unlimited volume in exchange for the silver bullion of the world. Who would benefit by such an arrangement? Clearly the parties who have silver to sell and no one else so certainly. The owners of silver at home and abroad would secure the currency of the United States in exchange for their property at nearly double its present market value. How is this currency to find its way from the pockets of the silver owners to the farmers, laboring men and other citizens in whose welfare these silver owners profess such an abiding interest? The farmer can only obtain his share of this money by giving something in exchange for it that the silver owner wants and at prices this owner is willing to pay. It is a fallacy to suppose the increased wealth of the silver owner will make him willing to pay double the present price for farm products for which there is no increased demand, or for the labor in the mine or elsewhere under like conditions. Why should increased wealth in the owner of silver have any different effect upon the immediate price of labor and commodities from the effect we have seen when vast wealth has accumulated in few hands as the result of producing oil, iron, coal or copper?

It is true the proposition to create the wealth of the silver owner by the people of the United States giving him currency in exchange for his silver introduces new conditions, but it is not true these conditions require him to part with his wealth for the benefit of the people from whom he received it. It may be the vast purchases of silver—and it should be borne in mind it is in effect a *purchase* of silver by the nation that is really proposed—would in time ruin the credit of the United States at home and abroad and that then more of its currency would be required to buy anything of real value, but this would not happen immediately and when it did result the currency would be so depreciated that any increased amount of it received would not by any possibility represent an increased purchasing power.

There has not been enough made of the fact that the free coinage of silver is intended to provide a market guaranteed by and at the expense of the people of the United States for the accumulated stock on hand and the entire silver produce *of the world*. It has been estimated that it would cost this country a premium more than a thousand million dollars to pay at the rate of one dollar for the accumulated silver of the world now worth about 50 cents.

In addition to this our people would have to stand ready to purchase the entire annual output of the world, except the limited quantity needed in the arts and for subsidiary coins, and it is estimated this would represent more than two hundred million dollars per annum, making a fair allowance for increase in production under the stimulus of a guaranteed market at nearly double the present prices.

The present production of silver in the world is estimated at 170 million ounces per annum, of which the United States produces nearly one-third, with Mexico closely approximating the same amount. If the people of the United States should adopt the free coinage of silver (meaning its purchase by our Government) on the basis of 16 to 1, we should soon see the silver of the world poured into our country to be warehoused by our Government, and the currency received in exchange would be used to increase the already objectionable foreign ownership in our lands, railroads, mines and other properties. This is all based on the assumption that the populistic theories of finance can be carried out. If there ever was a proposition to legislate wealth to the few at the cost of the many, that proposition is found in the platform of the nameless party or conglomeration of parties presenting Mr. Bryan for the consideration of believers in one standard and Messrs. Watson and Sewall for those who believe in a double standard, the governing ratio in this case being as yet undetermined.

The people of this great country of ours are neither dishonest nor unintelligent, and the verdict they will record next November will be one of which there will be no reason to be ashamed either at home or abroad.

FRANK J. FIRTH.

Record of Travel at Grade Crossings.

The elevation of the tracks of the Providence Division of the New York, New Haven & Hartford, from Boston to Forest Hills, abolishes 11 very busy grade crossings. As heretofore noted in these columns, the embankment and bridges for the new four-track road are not yet finished, but the elevated roadway has been so far completed that trains now run on the new tracks, and the grade crossings are abolished forever. A short time previous to the discontinuance of trains on the old grade, Superintendent McAlpine had a record made of the travel on the streets at all the crossings, which record for one day of 24 hours is shown below. The first table, giving the number of persons, includes those riding on carriages or wagons as well as pedestrians. The obstruction to street traffic, and the danger to both railroad and street travel, is perhaps best shown by the third table, showing the aggregate length of time that the streets were blocked during the 24 hours. Tremont street, for instance, was closed by the passage of trains nearly one fourth of the whole day, and the average of all the crossings was nearly one-sixth of the whole time.

Statement of Persons and Teams Crossing Tracks at Grade Between Forest Hills and Boston.

Persons.

	Day		Night		
Street.	7:00 a. m. to 12:00 n.	12:00 n. to 7:00 p. m.	7:00 p. m. to 12:00 m.	12:00 m. to 7:00 a. m.	Total in 24 hours.
Ruggles	1,345	3,550	3,424	419	8,738
Prentiss	3,276	5,724	904	250	10,154
Station	1,801	2,934	630	398	5,763
Tremont	4,560	7,052	5,370	1,806	18,788
New Heath	2,330	3,963	1,416	799	8,508
Old Heath	2,035	3,180	606	694	6,515
Boylston	2,642	3,498	2,185	385	8,710
Green	3,302	2,400	1,076	303	7,081
Keyes	1,260	1,823	721	251	4,055
Morton	1,337	1,861	391	240	3,829
Washington	924	1,425	367	250	2,966
Total	24,812	37,410	17,090	5,795	85,107
Teams.					
Street.					
Prentiss	784	1,260	3	4	2,051
Station	281	524	76	35	916
Tremont	757	853	60	93	1,763
New Heath	713	833	55	113	1,714
Old Heath	560	739	52	73	1,424
Boylston	203	664	67	35	969
Green	705	652	83	92	1,532
Keyes	200	245	17	71	533
Morton	265	448	56	28	797
Washington	302	360	44	47	753
Total	4,770	6,578	513	591	12,452
Total both	29,582	43,988	17,603	6,386	97,559

Gates down for passage of trains.

Street.	Day.	Night.	Total.
Ruggles	2 hrs. 27 min.	1 hr. 0 min.	3 hrs. 27 min.
Prentiss	2 " 27 "	1 " 0 "	3 " 27 "
Station	1 " 48 "	1 " 20 "	3 " 08 "
Tremont	4 " 15 "	1 " 38 "	5 " 53 "
New Heath	2 " 47 "	0 " 57 "	3 " 44 "
Old Heath	2 " 47 "	0 " 57 "	3 " 44 "
Boylston	2 " 17 "	1 " 05 "	3 " 22 "
Green	2 " 17 "	0 " 46 "	3 " 03 "
Keyes	1 " 48 "	1 " 22 "	3 " 10 "
Morton	3 " 36 "	2 " 05 "	5 " 41 "
Washington	1 " 48 "	1 " 20 "	3 " 08 "
Total	28 " 17 "	13 " 30 "	41 " 47 "
Average	2 " 34 "	1 " 13 "	3 " 48 "

Convention of the Road-Masters' Association of America.

An account of the first day's session on September 8, of the fourteenth annual convention of the Road-Masters' Association of America, at Niagara Falls, N. Y., was given in the *Railroad Gazette* of September 11. The reports of the committees on Elevation of Curves, on Frogs and Switches, and on Ballast were also given in that issue.

The second day's morning session began at 9:30 a. m. The report of the Committee on the Protection of Facing Point Switches was made by W. D. Otis, Chairman. The report advocated the use of a *distant* signal, placed at least 2,000 ft. from the switch, and of a *home* signal, placed at the switch, also of a facing lock, which locks the switch.

On the *discussion*, the majority of the members present agreed with the finding of the committee, that the distant signal should be at least 2,000 ft. from the switch.

A paper on Ditching, by Mr. J. M. Meade (A., T. & S. F.) was then read. It was resolved that the paper be received as information, and placed on the records of the association.

The Report on Elevation of Curves, which appeared in the *Railroad Gazette* of Sept. 11, was then taken up. The first paragraph and the table of elevations were discussed at some length. Mr. Caffrey asked for an explanation of the formula which is given and several members expressed opinion on the subject. Mr. Coates quoted a formula and also a table compiled from experimental work, both of which he offered as substitutes for those given in the report. Mr. Coates' suggestion was not adopted.

Several members expressed the opinion that the table was not suited to put in the hands of a track foreman, also that the elevations given were too little where the degree of curvature was low and too large where the curvature was high. After considerable discussion for and against striking out the paragraph and table, it was finally decided to carry the matter over to the evening session.

The meeting adjourned at 12:30, after the election of several new members.

At the evening session, which began at eight o'clock, the subject of Elevation of Curves was again taken up, and, after a short discussion, it was voted, on a motion by Mr. Fisher, that the whole report of the committee be accepted, with the exception of the last three lines, which referred to the inset of curves.

The report of the Committee on the Latest Improvement in Frogs and Switches was then read and discussed. It was resolved to accept the report as information and place it on the records of the association.

A vote was then taken on the place and time for the next annual convention. The place selected was Norfolk, Va., and the time, September 14, 1897.

The last session of the convention began on Thursday morning with an informal discussion on rail-joints. Mr. Brown believes from experience in suspended joints with all rails; he uses angle-bars for alignment only, depending for support on the suspended joint.

Mr. Stickney has used both the Weber and the Continuous joints, and has had good results from both; he believes that angle bars wear out too rapidly. In regard to the Weber joint, Messrs. Black and Coates have used it for some years, getting very good results. Messrs. Shanks, Ware, Sullivan and Burns have had good results from the Continuous joint.

A paper by Mr. Pownall, on the Railways of Japan, was also received as information, and a vote of thanks tendered to Mr. Pownall.

The report of the Committee on Ballast was then read by Mr. T. Hickey.

Secretary Dickson opened the *discussion* by reading a letter from Mr. W. H. Courtney, advocating trap rock or limestone, 9 to 10 in. thick, as the best possible ballast. Mr. Courtney also advises crushing to less than 1 in. Messrs. Caffrey and Coates both think that crushing should not go below 1½ in. Mr. Lahey prefers a layer of ¾-in. screenings, on top of coarser stone (1½ in.).

In regard to the use of burned clay, Mr. Jones has 58 miles of such ballast, which has given very good results. Mr. Jones advocates the use of "gumbo," a kind of clay which burns to an excellent ballast.

Obituary resolutions were passed on the deaths of Messrs. O. McGowan, E. R. Kitel and J. Kindelan; also resolutions of thanks in connection with the visit at Niagara Falls.

After a closing address by President Jones the newly elected officers were installed.

The meeting adjourned at 12:15 p. m.

In connection with the convention, two trips were taken, one to inspect the Niagara Falls power-house, and the other a trip on the Canada shore over the Niagara Falls Park & River Electric Railroad.

New Compound Consolidated Freight Locomotive—Vladicaucase Railroad, Russia.

The accompaning engraving shows one of the new compound consolidated locomotives, built by the Baldwin Locomotive Works for the Vladicaucase Railroad, Russia. Fifty engines of the design shown have been completed and delivered.

These locomotives are for use in heavy freight service and are of the Vauclain type of four-cylinder compound, with cylinders 13½ in. and 23 in. by 26-in. stroke. The drivers are 50 in. diameter with cast-steel centers.

The design provides for the use of naphtha for fuel.

The weight on the drivers is 116,480 lbs. and the total weight in working order is 132,000 lbs. The total heating surface is 1,944.25 sq. ft. and the area of the grate is 26.25 sq. ft.

The boiler is of the straight barrel type and carries a working steam pressure of 180 lbs. The diameter at the front end is 64 in. The material in the boiler is steel and in the firebox copper.

As liquid fuel is used, no netting is required in the smokebox.

The principal dimensions are given below:

General Description.

Type	Consolidation freight
Name or number	721 to 780
Name of builder	Baldwin Locomotive Works
Name of operating road	Vladicaucase Railroad, Russia
Gage	5 ft.
Simple or compound	Compound
Kind of fuel to be used	Naphtha
Weight on drivers	116,480 lbs.
" " truck wheels	15,520 "
" total	132,000 "

Dimensions.

Wheel base, total, of engine	21 ft. 4 in.
" " driving	13 " 5 "
" " total (engine and tender)	48 " 6½ "
Length over all, engine	34 " 2 "
" " " total, engine and tender	58 " 4 "
Height, center of boiler above rails	7 " 10¾ "
" of stack above rails	14 " 7¾ "
Heating surface, firebox	130.48 sq. ft.
" " tubes	1,813.77 "
" " total	1,944.25 "
Grate area	26.25 "

Wheels and Journals.

Drivers, number	Eight
" diameter	50 in.
" material of centers	Cast steel
Truck wheels, diameter	36 in.
Journals, driving axle, size	8 × 9 "
" truck " "	5½×10 "
Main crank pin, size	5½× 6 "
Parallel rod pins, size	Front and back, 4×3¼ in.; middle, 6×5 in.
Crosshead pin, size	3¾×2¾ in.

Cylinders.

Cylinders, diameter	H. P., 13½ in.; L. P., 23 in.
Piston, stroke	26 in.
" rod, diameter	3½ in.
Main rod, length center to center	8 ft. 11½ in.
Steam ports, length	27 in.
" " width	1½ in.
Exhaust ports, length	27 in.
" " width	4½ in.
Bridge, width	1½, 3 and 2¾ in.

Valves.

Valves, kind of	Balanced piston, 11½ in. diameter
" greatest travel	5 in.
" outside lap	H. P. = ⅞ in.; L. P. = ⅝ in.
" inside lap or clearance	H. P. = ⅛ in.; L. P. = ⅛ in.
" lead in full gear	H. P. = ⅛ in.; L. P. = ⅜ in.
" " constant or variable	Variable

Boilers.

Boiler, type of	Straight radial stay
" working steam pressure	180 lbs.
" material in barrel	Steel
" thickness of material in barrel	11/16 in. and 5/8 in.
" diameter of barrel at front sheet	64 in.
Seams, kind of, horizontal	Butt, double covering strips
" " circumferential	Double-riveted lap
Thickness of tube sheets	⅜ in. back, ¾ in. front
" crownsheet	⅝ in.
Crownsheet stayed with	Radial stays
Dome, diameter	31½ in.

Tubes.

Tubes, number	259
" material	Soft iron No. 11 W. G.

Tubes, outside diameter	2 in.
" length over sheets	13 ft. 6 in.
Firebox.	
Firebox, length	7 ft.
" width	3 ft 9 in.
" depth front	66¼ in.
" " back	64¼ in.
" material	Red copper.
" thickness of sheets	⅜ in.
" brick arch	Yes
" water space, width. Front, 4 in.; sides, 3 in.; back, 3 in.	
Grate, kind of	Firebrick supported on cast-iron bars.
Smokebox.	
Smokebox, diameter	Inside 64 in.
" length from tube sheet to end	56¾ in.
Other Parts.	
Exhaust nozzle, single or double	Single, high.
" " variable or permanent	Permanent
" " diameter	10½ in.
" " distance of tip or below center of boiler	9 in.
Stack, straight or taper	Straight
" least diameter	18 in.
" greatest diameter	18 in.
" height above smokebox	4 ft.
Tender.	
Type—6-wheel or with swivel trucks	Swivel
Tank capacity for water	650 cu. ft.
Capacity	240 cu. ft. naphtha
Kind of material in tank	Iron
Thickness of tank sheets	¼ in.—No. 6 and No. 8
Type of under-frame, wood or iron	Iron
" " truck	Arch bar. Wood bolster
Truck with swinging motion or rigid bolster	Rigid
Type of truck spring	Semi-elliptic
Diameter of truck wheels	32½ in.
" and length of axle journals	4½ × 9
Distance between centers of journals	7 ft. 8 in.
Diameter of wheel fit on axle	5⅞ in.
" of center of axle	5
Type of truck bolster	Wood—rigid
" " " transom	
Length of tender frame over bumpers	21 ft. 8 in.
" " tank	18 ft. 5 in.
Width of tank	9 ft. 10 in.
Height of tank, not including collar	Front, 3 ft. 5¼ in. / Back, 4 ft. 11½ in.
Height of tank over collar	53 in.
Type of back drawhead	Screw coupling
With or without water scoop	Without

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The Treasurer reported:

Balance at beginning of year	$1,312
Receipts	1,467
Total	$2,779
Expenditures	$1,409
Balance on hand at end of year	1,370
Total	$2 779

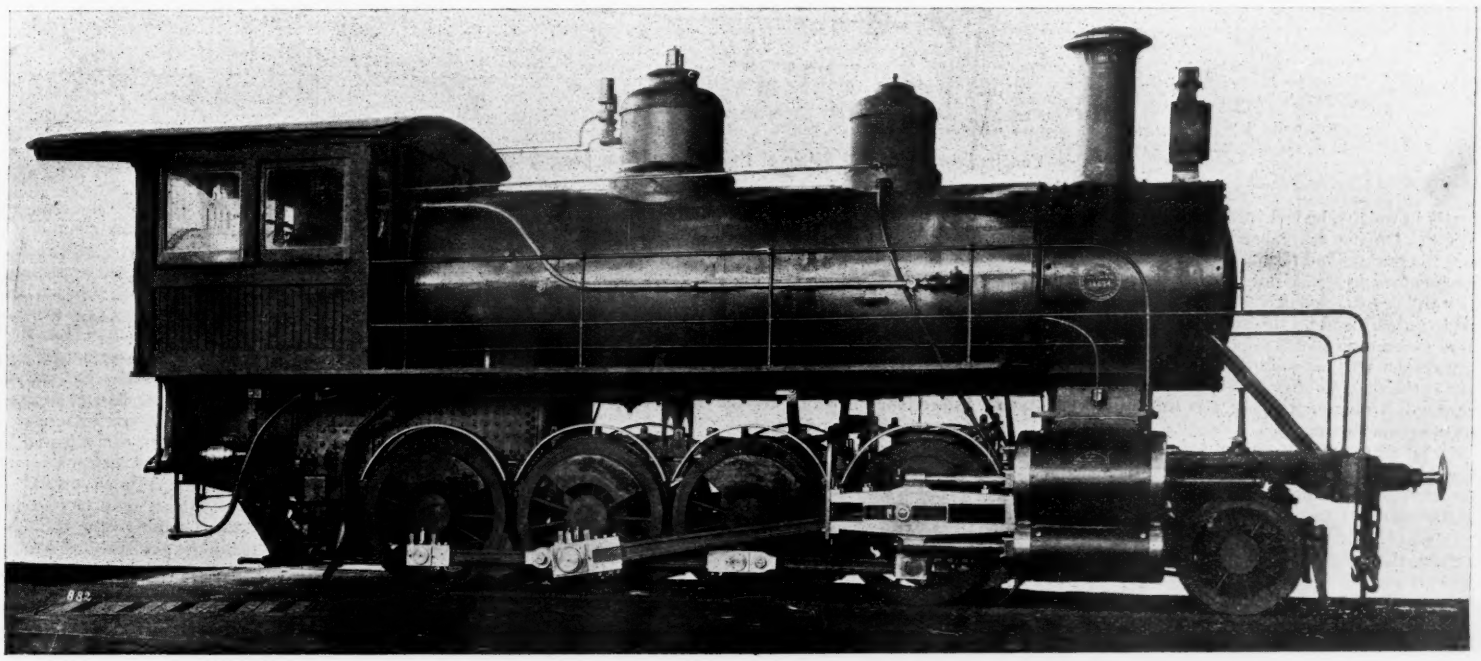
The Secretary reported the total membership at 237, a gain of 12 since last year. The amount collected for dues had been about $100 less than in the previous year. The receipts for advertisements in the proceedings were about $500. The membership and attendance at the last eight meetings were as follows:

	Members.	Attendance.	New Members.
18th	171	28	15
19th	116	35	42
20th	110	38	27
21st	194	40	61
22d	194	29	53
23d	285	24	7
24th	249	33	17
25th	225	29	20

gested, that no one form of plate yet devised will give perfect results under all conditions, yet it appears that a plate combining longitudinal flanges entering the tie parallel with the grain and a shoulder on the outside of rail, would be most desirable. That tie plates, as one of the most important features of track equipment, have come to stay, there is no doubt; and that they are of special value on sharp curves and heavy grade; in tunnels, particularly where wet and where the difficulty of securing good track is great, because of the softening of the ties by the action of water, gases, etc.; in yards where there is constant switching and heavy traffic; at platforms in front of stations; and in street crossings, where the ties are kept soft by moisture, and where it is both difficult and expensive to get at the track for renewal of ties, re-surfacing or re-gaging; on bridges and trestles, particularly those on curves, and on grades where a great deal of sand is used and where traffic is very heavy. It is possible that in the Southern states, where oak ties are plentiful and cheap, their use on tangents might not be justifiable, but in the North and West where only soft ties are to be had, or where the price of ties is high, their general use on all kinds of track seems desirable. The Chief Engineer of one important railroad says: "There are very few road masters who, if they were asked to choose, for general use, between 60-lb. rail with tie plates and 75-lb. rail without tie plates, would not select the latter. The cost is about equal."

The committee believes that the chemical preservation of cross ties and the proper dimensions of the same are suitable subjects to be taken up by it in the future.

Mr. Sully offered a suggestion that this committee should, in the coming year, take up the question of the cost of labor on ties and the value of different woods. In the discussion on tie plates the most succinct expression was that of a section-master (quoted by one of the members) who held that "if the tie is sound the plate is of no use, while if the tie is rotton the plate is no good." Rail braces were characterized as a nuisance, or rather as a necessary evil, being necessary on sharp curves.



Vauclain Compound Freight Locomotive for ihe Vladicaucase Railroad, Russia.

Built by the BALDWIN LOCOMOTIVE WORKS, *Philadelphia.*

Names of Manufacturers of Special Equipment.

Wheel centers	American Steel Casting Co.
Tires	Standard
Axles	Baldwin Locomotive Works
Sight-feed lubricators	Nathan
Bell ringer	
Front and back couplers	Baldwin Locomotive Works
Safety valve	Crosby
Muffler	Crosby
Steam heat equipment	
Reducing valves	
Sanding devices	
Injector	Sellers
Driver brake equipment	American Brake Co.
Tender brake equipment	
" " beam	Baldwin Locomotive Works
" " shoe	" " "
Driver " "	American Brake Co.
Air pump	
" " governor	
Steam gages	Crosby
Engine truck springs	Baldwin Locomotive Works
Driving springs	" " "
Tender "	" " "
Piston rod packing	U. S. Metallic Packing Co.
Valve "	" " " "
Other specialties	Magnesia
Sectional lagging	Keasley & Mattison

American Society of Railroad Superintendents.

The twenty-sixth meeting of this society was held at Niagara Falls, Sept. 9 and 10. About forty members were present, and some of them had their wives with them. Among these was Mr. Neville Priestly, District Traffic Superintendent of the Indian State Railroads, Bandikui, Rajputana, India. Thirty-five new members were admitted, besides two associate members, H. F. Baldwin, Engineer of Maintenance of Way (Erie), and Charles Hansel, Vice-President of the National Swith & Signal Co., and two honorary members, E. T. D. Myers, President of the American Railway Association, and H. H. Vreeland, President of the Metropolitan Traction Co. Invitations were received to hold next year's meeting at Nashville, also at Denver and at Detroit.

The Executive Committee made a report recommending that the committees should be enlarged, either in number or membership, so as to be able to subdivide their work, and later in the meeting an amendment to the constitution was proposed, making each of the standing committees consist of nine members. This proposition has to stand over until the next meeting, and pending action the society authorized the President to appoint six members of the society to act with each committee. The Executive Committee recommends that prizes be offered for papers on topics suitable to be brought before the society, and also that the important papers read at the 25 meetings of the society heretofore held be collected, edited and printed in a book. A recommendation was also made that the society try to affiliate more closely with other railroad organizations.

The Secretary made a strong plea for more active efforts on the part of members to enable the society to fulfill its mission. There is no other organization in which superintendents can have free scope, as individuals, and this body should be the intellectual whetstone for all the members. The social features of the last few meetings were not only agreeable, but profitable. The Secretary's report ended with brief eulogies of the three members who have died during the past year, John Adams, W. G. Wattson and Waterman Stone.

The Committee on Roadway, Seely Dunn, A. W. Johnston and M. J. C. Wrenne, made a report on tie plates, in which an effort was made, regardless of any particular form now in use, to find what form of plate is best adapted to American railroads. The committee believes that enough experience has not yet been accumulated to form a conclusive opinion. A circular was sent out last spring and replies were received from 73 members, of whom only 49 had used tie plates. Information is given concerning experience with several million plates, though names of roads are not given and much of the information is of doubtful value, because the persons giving it make only superficial comparisons between different styles of plates. That tie plates in general are valuable there is no doubt. The report gives a list of 23 different sizes of tie plates now in use. The most difficult problems are indicated by the fact that a tie plate too thin will buckle, while one too thick will permit pounding of the rail. Twenty-eight answers out of 44 indicate unqualified preference for plates with longitudinal ribs. The great mass of opinion is to the effect that the tie plate supersedes the rail brace. In conclusion the report says:

It may be properly said that all the different forms of plates have their good points, but it would not be safe at this time, considering the comparatively short experience that has been had with them, to condemn or to approve of either kind. It is possible, as was before suggested, that no one form of plate yet devised will give perfect results under all conditions, yet it appears that a plate combining longitudinal flanges entering the tie parallel with the grain and a shoulder on the outside of rail, would be most desirable. That tie plates, as one of the most important features of track equipment, have come to stay, there is no doubt; and that they are of special value on sharp curves and heavy grade; in tunnels, particularly where wet and where the difficulty of securing good track is great, because of the softening of the ties by the action of water, gases, etc.; in yards where there is constant switching and heavy traffic; at platforms in front of stations; and in street crossings, where the ties are kept soft by moisture, and where it is both difficult and expensive to get at the track for renewal of ties, re-surfacing or re-gaging; on bridges and trestles, particularly those on curves, and on grades where a great deal of sand is used and where traffic is very heavy. It is possible that in the Southern states, where oak ties are plentiful and cheap, their use on tangents might not be justifiable, but in the North and West where only soft ties are to be had, or where the price of ties is high, their general use on all kinds of track seems desirable. The Chief Engineer of one important railroad says: "There are very few road masters who, if they were asked to choose, for general use, between 60-lb. rail with tie plates and 75-lb. rail without tie plates, would not select the latter. The cost is about equal."

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Mr. Sully offered a suggestion that this committee should, in the coming year, take up the question of the cost of labor on ties and the value of different woods. In the discussion on tie plates the most succinct expression was that of a section-master (quoted by one of the members) who held that "if the tie is sound the plate is of no use, while if the tie is rotton the plate is no good." Rail braces were characterized as a nuisance, or rather as a necessary evil, being necessary on sharp curves. This opinion was by a member who had not used tie plates. Mr. Derr gave his experience with the Servis tie plate, of which he has used a large number. He would use tie plates on every second tie on tangents. Mr. Hammond gave some points of his investigation of different styles of plates. The ideal plate is difficult to roll, and a plate with a lug or shoulder on the outside, to hold the rail in line, has not been successfully rolled with deep ribs on the under side. Mr. Baldwin, while not admitting that a shoulder was necessary, even on curves, asked why, if we must have it there, we should have it also on tangents.

The Chairman of the Committee on Machinery, Mr W. F. Potter, made a report on Electricity as the motive power of the future. This motive power has already competed vigorously with the steam engine in suburban passenger service, and the report predicted that it would completely supersede the locomotive, though the change would be gradual. Superintendents must keep pace with electrical development. The discussion on this report indicated that it was looked upon as rather too favorable to the electric motor. The electrical engineer has not yet got very far away from the conditions which limit the steam engineer. The consumption of coal is still an important element with both, and the cost of copper is a great obstacle to the transmission of electrical energy long distances.

Mr. Niles (L. S. & M. S.) mentioned some of the difficulties encountered in his investigation of this subject. On his road, to move the freight by the largest electric motors with which he is familiar, would multiply the number of trains enormously, and this would soon necessitate additional tracks. He had found in some cases that where the electric street cars diminished his business they afterward built up suburban places so as to later produce an increase of business for the steam road.

Mr. Whittelsey, from the Committee on Transporta-

tion, made a report on tonnage rating of freight locomotives. Circulars had been sent out and replies received from 30 roads using this system. These replies clearly show a large saving, the percentage of increase of load varying from 3 to 20. In five cases there had been an increase in the average speed of freight trains. One road has increased the number of tons per car from 12 to 15 per cent.; and, commenting on this fact, the committee suggests that the need of more generally loading cars to their full capacity is an important subject for inquiry.

Mr. Brum (Erie) reported gratifying experience with tonnage rating, although he adopted it only three months ago. Of westbound loaded cars, which vary greatly in weight, he had increased the train load from 30 to 40. On the other hand, he found that in some cases his engines had formerly been too heavily loaded. Instead of using for his unit the ton of 2,000 lbs., he uses the "M," or 1,000 lbs. This makes it easier for conductors to quickly add up the weights of empty cars. The nearest even thousand is always taken. In answer to an inquiry, the speaker said that there was no trouble in getting the weights of freight-house cars promptly, from the way-bill clerks, whether the way bills were made out in season or not.

Mr. Potter (F. & P. M.) asked for experience as to the allowance necessary to be made for the additional friction of very long trains of empty cars. He had had to haul some very long trains of empties and found that to enable an engine to draw its quota he had to arbitrarily increase the weight of empty cars, in some cases as much as 60 per cent.

Mr. Fitch said the Erie intended to use a dynamometer car to accurately test the power of locomotives. This discussion ended the forenoon session of the first day.

In the afternoon the Committee on Signaling, of which Mr. W. L. Derr, is Chairman, took the somewhat novel course of making an exhibit, in the place of a written report, which innovation was well received. Mr. Charles Hansel, of the National Switch & Signal Co., at the request of the committee, described the exhibit, which consisted of an interlocking frame with Patenall's electrical locking apparatus and the Webb & Thomson staff apparatus. Mr. Hansel gave a careful elucidation of the methods of operating these machines, except such details as could be studied only by following electrical circuits in a diagram. To illustrate switch movements the speaker used large diagrams hung on the wall. In discussing interlocking Mr. Hansel emphasized the point that when it was agreed, nine years ago, that a derailing switch should be 300 ft. from a crossing the average rate of speed of trains was much lower than it is now, and he held that the derailer should now be at least 500 ft. from a crossing. The interlocking machine used to illustrate the address was the National Company's 1896 model. The staff apparatus has lately been improved, so that now it has all the advantages of the tablet; that is to say, the objection to the staff because so heavy and bulky an article cannot be conveniently delivered to trains running at high speed, has been overcome, and that in a very simple manner. As is well known, an essential feature of this apparatus is the locking junction of the staff. Taking a staff out of the pillar at *A* locks *in* all the staffs remaining in the pillars at both *A* and *B*; and to release another staff at *A* the one out must be put back into the pillar at *B*. Only one staff can be out at the same time, for use between station *A* and station *B*. But the staff acts on the locking mechanism by means of five collars or rings fixed to it; and by making these collars removable, and providing a supply of extra staffs at both *A* and *B*, without collars, it is necessary to carry on the engine from *A* to *B* only the rings, which weigh but a few ounces. In practice three rings are fixed to the staffs and two are made removable. Thus, on taking out a staff from the pillar at *A* two of the rings are taken off from it and the staff is thrown aside; one ring is given to the conductor and one to the engineman (or both may be given to the engineman) and both are taken to *B*, where, being fixed to a spare staff (with three rings already fixed to it) they give to that staff the same power to unlock the pillar as they had before given to the staff from which they were detached at *A*. No staff is good for anything without five rings, so that the two other rings in the possession of an engineman give him perfect assurance that no one can by any mistake get out another staff or reach its removable rings until he gives up those in his hands.

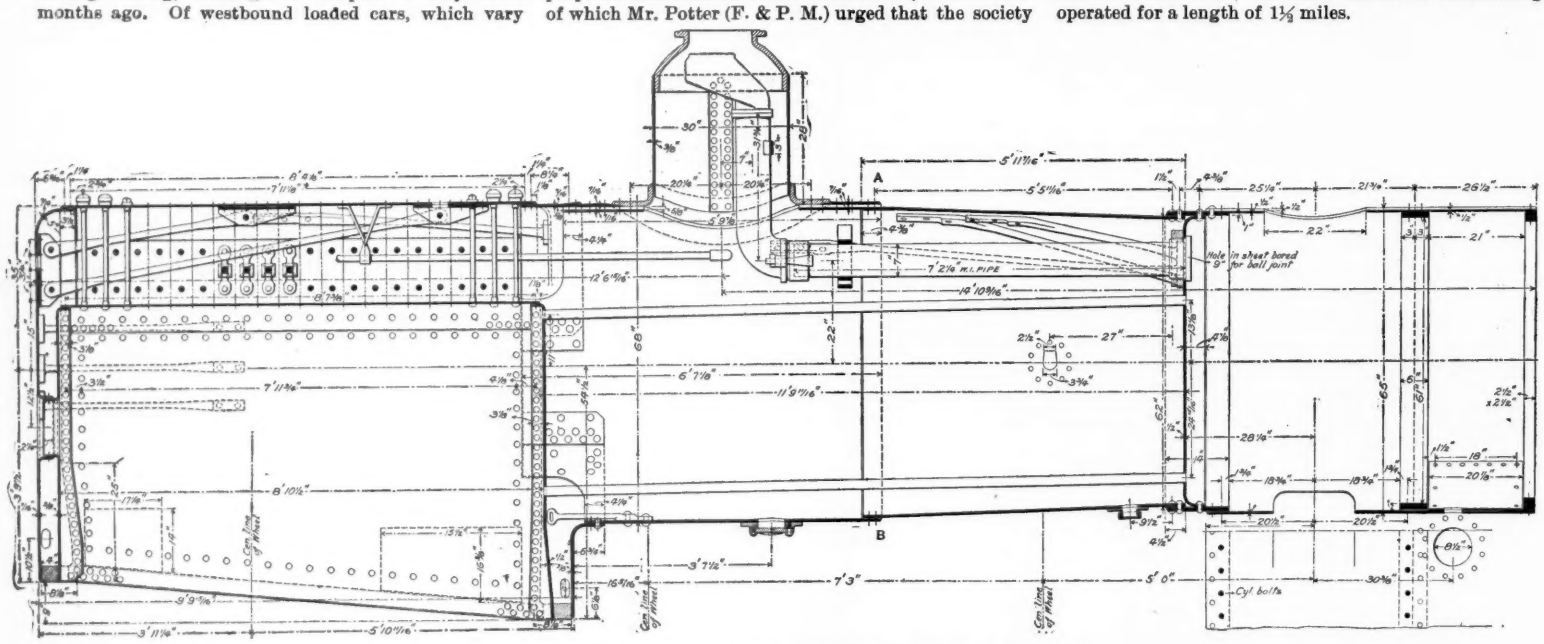
On Thursday the first business was the discussion of proposed amendments to the constitution, in the course of which Mr. Potter (F. & P. M.) urged that the society confine itself more strictly to topics related to the everyday work of the members. In taking up locomotives, track and other topics which have long been dealt with successfully by other societies, the superintendents, though they may be well acquainted with the subject and may have an interesting interchange of views, are nevertheless using up valuable time which could be spent to better advantage in discussing discipline or signaling or other subjects in which they are vitally interested, but which are not adequately treated in any other deliberative body.

The report of the Committee on Signaling presented on Wednesday was then taken up for discussion. Mr Priestly gave a brief account of the signaling on the Indian State Railroads.

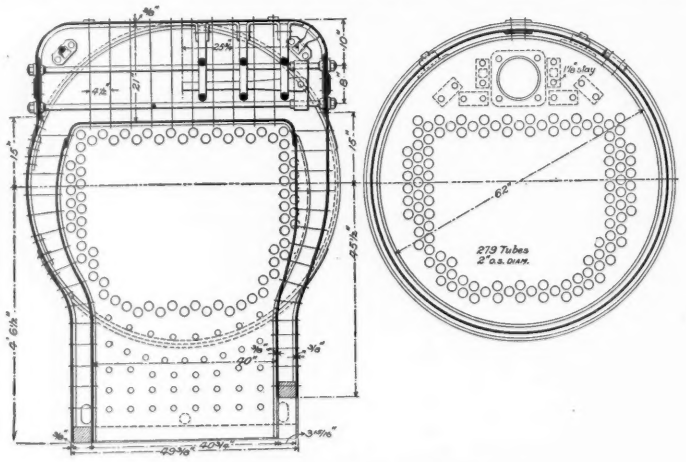
Mr. Derr (Erie) briefly described the practice on his division. The main line in his territory is divided into 43 blocks, the longest of which is 3½ miles in length. Blocking is maintained in long yards as well as on the open road. Signalmen communicate with one another by bells. The stations are well equipped with distant signals, which are placed at from 1,320 ft. to 3,200 ft. from the home signal. Advance or starting signals are located about one train length from the home signal. Some of the crossovers, but not all, are provided with low signals for reverse movements. Only a few of the switches are yet interlocked with signals.

Mr. BRUNN (Erie) described the progress which had been made on his division since the adoption of the block system. At first absolute blocking was not enforced much except before and behind passenger trains; but experienced showed that it could be enforced between freight trains much of the time, and by constant care and effort the standard has been so raised that now all blocking is absolute except for freights approaching division terminals or other large yards where trains have to be bunched together. Here permissive signals are given, but in every case the signal is in the shape of a written order and it specifies where the preceding train is. For instance, if a saving of time is important a following train is given a permissive order at *A* when the preceding train has reached the switch at *B* and is ready to move into the side track. Or, in case a local freight is doing work in the middle of a block and can be communicated with by telegraph, a permissive order is given to a following train, stating the whereabouts of the local freight. This method of handling trains has proved very satisfactory.

In the discussion of the track circuit, Mr. Schreuder stated that on the Pennsylvania road, where the track is made of 60-ft. rails, the track circuit is successfully operated for a length of 1½ miles.



Longitudinal Section of Boiler of New Pennsylvania Freight Locomotive.



Sections Through Boiler—Freight Locomotive.

Mr. Hansel showed a model of a combination semaphore which the National Switch & Signal Company has provided for the new line of the New York Central in Park avenue, New York City, for giving permissive entrance to a block section. The signal has two blades working on the same spindle, and when they are in the horizontal or stop position one is directly in front of the other. When it is desired to give a permissive signal one blade is left in the horizontal position and the other is pulled down to an angle of about 65 deg. from horizontal. When a clear signal is given both arms are pulled down to 65 deg. By means of a compound lever at the bottom of the post both these motions are made by a single rod or pipe connection to the cabin. This connection is fixed to a lever which may be fastened in three positions: in the center of the sector it holds the signal at danger, pulling it gives a clear signal and pushing it gives a permissive signal.

The regular business for Thursday morning was the discussion of the report on Relations with Employees, presented at the meeting a year ago. This report was read and the general subject of discipline of employees was then discussed informally. Brown's discipline was warmly defended, while objections to it, based chiefly on the theory that the behavior of some children can never be improved without giving them a sound thrashing occasionally, were vigorously set forth.

The election of officers resulted as follows (President C. B. Price and Secretary C. A. Hammond hold over): First Vice-President, W. F. Potter (F. & P. M.); Second Vice-President, George R. Brown (Fall Brook); members of Executive Committee for two years, C. A. Brunn (Erie), Ralph Peters (P. C. C. & St. L.); Committee on Roadway, Seeley Dunn, C. A. McAlpine, T. A. Roberts; on machinery, J. K. V. Agnew, A. J. Hitt, A. W. Johnston; on transportation, T. F. Whittelsey, C. E. Doyle, C. R. Fitch; on signaling, W. L. Derr, C. H. Ketcham, H. D. Titus.

The instruments exhibited by Mr. Hansel in connection with his paper on Signaling were a four-lever interlocking machine of the National 1896 model and a pair of Webb & Thomson's electric staff pillars. Mr. Schreuder, representing the Union Switch & Signal Company, exhibited a beautiful model of his company's automatic block signals showing four blocks. The signals are of the company's new design of an enclosed disk operated by an electro-magnet.

On Wednesday afternoon the members and their friends visited the power-house of the Niagara Falls Power Company, and were shown the great dynamos, 12½ ft. in diameter, and the other sights, by Major

Wheeler. On Wednesday evening the annual banquet was held at the International Hotel. About 60 persons were present, including many ladies, and the supper was pronounced one of the most successful that the society has ever had. On Thursday afternoon the party took a ride over the Gorge Railroad by invitation of Capt. John M. Brinker, President of the road. This road is double track all the way, descending by a 3½ per cent. grade nearly to the level of the water in the Niagara River (below the Falls), and thence running along a narrow roadway, much of it blasted out of the rocks, to Lewiston, six miles below. At Lewiston the river was crossed by boat and the party made the return trip on the Canada side by the electric line of the Niagara Falls Park & River Railway Company, as the guests of the General Manager, Mr. Ross Mackenzie. This trip was extended to a point a mile above the Falls, and when it was finished the party returned to their starting point over the upper suspension bridge.

On Wednesday some one took a Presidential vote among the members in the meeting room and the result was: McKinley, 23; Palmer, 3; Bryan, 0.

The New Freight Locomotives of the Pennsylvania Railroad.

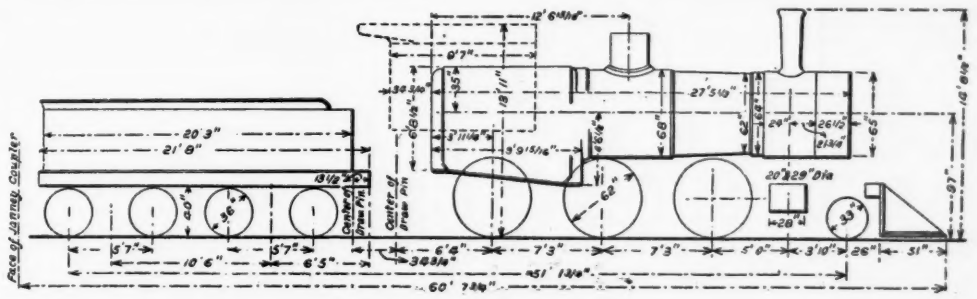
Sharp competition and constantly falling freight rates make it more and more difficult for railroads to earn their expenses, and as a result it becomes necessary to haul the heaviest freight trains at a speed that a few years ago was considered about right for passenger trains. Instead of getting a 50-car train over a certain division at a speed of 18 or 20 miles an hour, the conditions of traffic on some roads now require that the run be made at from 30 to 35 miles an hour.

The officers of the motive power department of the Pennsylvania Railroad decided, some months ago, to design a locomotive for just such work, and capable of hauling heavy fast trains with the maximum economy of coal consumption. Their well-known class "R" consolidation locomotive has done excellent service, but it is not sufficiently powerful, considering the needs of the future, and as soon as such an engine is run at anything like high speed, the wear and tear on the machine itself becomes great, making repairs too costly. In making a new design, this fact was very carefully considered, and comparatively large driving wheels were used. Then, by permitting great weight for the whole engine, large cylinders and a very large boiler could be advantageously used. This design was worked out last year by Mr. Casanave and Mr. Vogt, and illustrated in the *Railroad Gazette*, Dec. 20, 1895. At that time they built five locomotives in accordance with their new designs, for purposes of experiment, with the idea of introducing changes and modifications if the test of actual service showed they were needed. Of these five mogul locomotives, one was a simple engine, and the other four were compounds, one each of the Pittsburgh, Richmond, Von Borries and Gölsdorf systems. By reference to the table of dimensions, it will be seen that these are very heavy and powerful, and though the type has not yet been adopted as a standard, it has already shown itself to be highly satisfactory in service, and it fulfills the expectations of the designers.

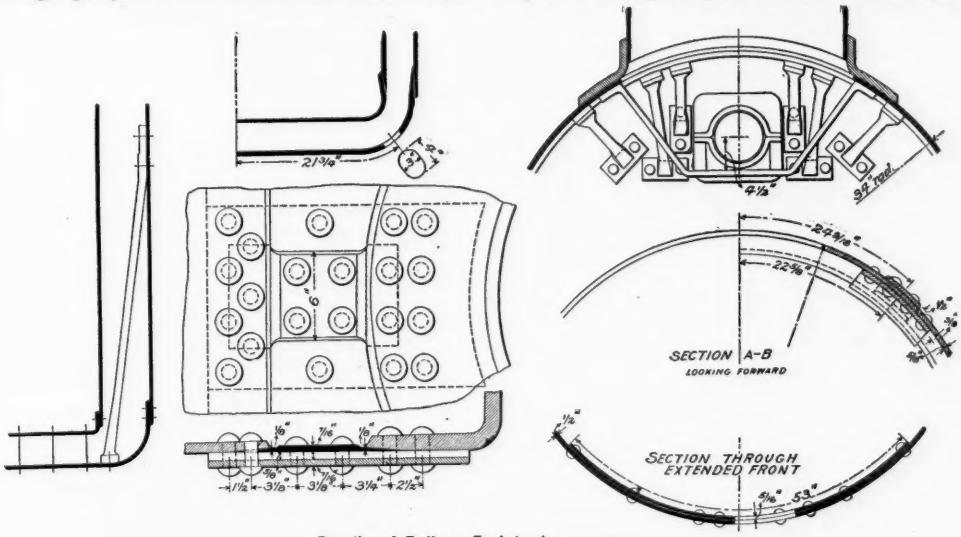
The compound engines have not been long enough in service to enable any final decision to be made as to the relative merits of the four systems. Their performance is being watched with the greatest care, their coal and water consumption, the tonnage hauled by them, and the frequency of their visits to the shop for repairs are all carefully noted and compared, thus furnishing a large amount of information on which to base future changes in details. The Pennsylvania officers do not intend to adopt any type of compound locomotive as standard until after exhaustive trials and experiments which may require a long time yet to complete. As to the fuel economy effected by the use of the compound engine, over the simple in the same kind of service there is no doubt whatever, and it is stated to be about 20 per cent.

While the compound engines are being experimented with, the new type of simple engine seems to be so successful that the company is now building 15 more at Altoona, which on completion will be put in regular service hauling heavy first freight trains. These locomotives show the completeness and carefulness of design characteristic of all the work turned out at Altoona. They are powerful, being run at 185 lbs. boiler pressure, and having plenty of weight on the driving wheels. It is now very likely that this mogul type will be adopted as a standard, after a little longer trial on the road, as the results thus far obtained show that it is a superior engine to the class "R" consolidation for the present condition of service.

The boiler of these moguls is worth special notice. It has a tapering shell, from 62 to 68 in., in the first ring, back of which is a straight 68-in. ring carrying the dome, and then the Belpaire firebox. It is almost identical with that for the class "L" passenger engine, but somewhat larger in the shell and shorter in the firebox. Side, back and crown sheets of firebox are ⅜-in., tube sheets and those in the shell, ½ in. The staybolts are ⅜ in. The boiler is very strongly built throughout, all longitudinal seams being butt-jointed, with covering strips inside and out, circumferential seams of the usual form, double riveted. For the compound engines, these boilers are worked at 205 lbs. pressure and appear to possess a large factor of safety even for that. They are unusually well provided with handhold plates and arrangements for washing out and inspecting. Magnesia sectional covering is used for the lagging.



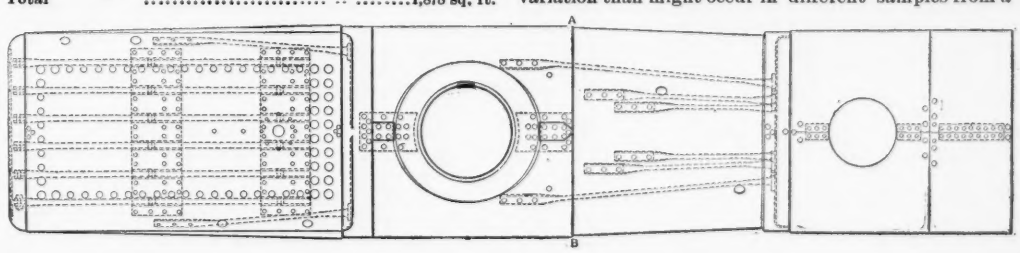
Pennsylvania Freight Locomotive.



Details of Boiler—Freight Locomotive.

Below is a table of the principal dimensions of these engines, reproduced from our issue of Dec. 20, 1895; the diagram herewith is also from that article:

Cylinders—diameter	20 in.
Stroke	28 in.
Driving wheels—diameter	62 in.
Truck " "	33 in.
Total weight about	152,000 lbs.
Weight on drivers about	132,000 lbs.
Driving axle journals	8½ × 12 in.
Truck " "	5½ × 10 in.
Belpaire boiler: taper shell, 62 to 68 in. diam.: 279 2 in. tubes, 11 ft. 8 11/16 in. between sheets; firebox, inside, 9 ft. long by 40 ft. wide.	
Heating surface, tubes	1,725 sq. ft.
" " firebox	153 sq. ft.
Total "	1,878 sq. ft.
Grate area	29.9 sq. ft.
Center to center of cylinders	7 ft. 2 in.
Tender	3,600 gals. water.
"	15,000 lbs. coal.



Top View of Boiler—Freight Locomotive.

The Effect of High Rates of Combustion upon the Efficiency of Locomotive Boilers.*

PROF. W. F. M. GOSS.

The experiments with which this paper is concerned were carried out a few months ago in the locomotive laboratory of Purdue University. The locomotive experimented with is of the eight-wheeled type, with 17 × 24-in. cylinders, and weighs 85,000 lbs. The deadening, which was employed to cut out portions of the grate and give different grate areas, was of brick laid up in fire-clay, the effect being to make the covered portions of the grate as nearly air-tight as possible. The material extended across the breadth of the firebox, the sections of the grate covered being disconnected from the rocking mechanism, so that the remainder could be used with undiminished effect.

The weight of sparks or cinders passing the heating surfaces is the sum of those caught in the front end of the locomotive and those passing out at the top of the stack. The sparks which accumulated in the front end were easily collected and weighed. Of those which passed out of the stack, a portion only were collected, the sample being so chosen as to serve as a basis from which the value of the whole could be estimated.

Aside from their use as a means of checking other readings, the record of the Bristol recording gages was useful in showing with what degree of constancy the desired conditions were maintained. (Figs. 1 and 2.) On the charts of these gages, the distance between any two adjacent circles represents a definite difference of pressure; while the curved lines extending outward from the center mark time intervals, the smallest division being equal to a five-minute interval. Figures representing the hour appear around the outside of the chart. The time mechanism is such as will give the chart a complete revolution every six hours. The charts shown are from Test No. 4, for which the rate of combustion was maximum. Fig. 1 represents the boiler pressure. The record beginning on the line B and ending on the same line.

Fig. 2 is the chart from the recording gage which gives the pressure of the steam in the exhaust port of the saddle.

The relation between the rate of combustion and the weight of water per pound of coal for the Purdue locomotive "Schenectady," while using Brazil block coal, is shown by Fig. 3. From this diagram it appears that when coal is burned at the rate of 50 lbs. per square foot of grate per hour, 8 lbs of water are evaporated for each pound of coal; while if the rate of combustion is increased to 180 lbs. per foot of grate, the evaporation falls to about 5 lbs.—a loss in water evaporated per pound of coal of nearly 40 per cent. This loss may be due to a failure of the heating surfaces to absorb properly the increased volume of heat passing over them, or to the imperfect combustion of the fuel upon the grate, or it may be due to a combination of these causes.

That a portion of the loss occurs along the heating surfaces hardly admits of question, since it is well known that any increase in the rate of combustion results in a rise in the temperature of the smokebox gases; but whether, under ordinary conditions, any considerable portion of the loss shown by Fig. 3 is due to imperfect combustion has not been demonstrated.

The first test was run with the locomotive under normal conditions. The whole grate was covered with fuel, the throttle was fully open, the cut-off approximately 6 in., and the load such as to make the speed 25 miles per hour. These conditions gave a rate of combustion of 61 lbs. of coal per square foot of grate per hour.

In preparation for the second test, one-quarter of the grate was made non-effective, or "deadened" by a covering of fire-brick. The exhaust tip was reduced, so that, while the engine was running as before and using approximately the same amount of steam, the same total weight of fuel could be burned on the reduced grate as in the first test had been burned on the whole grate. Trial tests were run until it was known that the changes made would permit the desired conditions to be maintained. The rate of combustion in this test was 84 lbs. per square foot of grate area.

In the third test, the grate surface was reduced to half its original area, and the rate of combustion was increased to 124 lbs. per square foot of grate area; and during the fourth test only, one-quarter of the original grate was used, the combustion in this case rising to 241 lbs. per square foot of grate surface.

Each test was a duplicate of every other test, except in the matter of great area, this being the one variable for the series. The coal used in the several tests was of uniform quality, the chemical analysis showing no greater variation than might occur in different samples from a single shipment. The maximum weight of coal fired per hour in any test was 1,037 and the minimum was 1,038, a difference less than 50 lbs. in more than a thousand, while the variation during three or four tests does not exceed 1.2 per cent. of the weight fired. All external conditions affecting the action of the boilers were uniform throughout the series.

The one variable for the series—namely, a different

* Abstract of paper presented at the meeting of the New York Railroad Club, Sept. 17, 1896.

rate of combustion—was secured by keeping constant the weight of coal fired and by varying the area of the grate. There were burned each hour on each square foot of effective grate surface, 61 lbs. during the first test, 84 during the second, 124 during the third and 241 during the fourth. These values more than cover the entire range of rates usual in locomotives. Evidence of losses at the grate with increased rates of combustion is to be found in the record of water evaporated per pound

OBSERVED AND CALCULATED DATA.

Test number	1	2	3	4
Month and day (1896)	Feb. 8.	Feb. 11.	Feb. 15.	Feb. 22.
Length of test, hrs.	6.	6.	6.	6.
Approx. portion of whole grate used	Full.	¾	½	¼
Effective grate area, sq. ft.	17.50	13.01	8.74	4.31
Barometric pres., lbs.	14.41	14.43	14.35	14.47
Analysis of Coal.				
P. ct. fixed carbon	49.65	51.84	51.09	51.59
P. ct. volatile matter	40.29	39.00	38 93	28.87
P. ct. comb. moisture	3.15	3.62	2.35	3.44
P. ct. ash	6.91	5.54	7.63	6.10
Coal (Brazil Block).				
Lbs. fired	6,522.	6,628.	6,716.	6,328.
Wt. of water in each lbs. of coal fired	0.012	0.016	0.030	0.012
Lbs. of dry coal per hr.	1,074.	1,087.	1,086.	1,038.
Lbs. of dry coal per hr. per sq. ft. of grate	61.1	83.5	124.2	240.8
Lbs. of combustible for test	5,792.	5,921.	5,856.	5,635.
Approx. No. B. T. U. per lb. of dry coal	13,000.	13,000.	13 000.	13,000.
Theo. evap. from and at 212 deg. per lb. of dry coal	13.46	13.46	13.46	13.46
Ash.				
Lbs. of dry ash in ash-pan for test	446.	396.	297.	161.
Lbs. of ash in coal fired as shown by analysis of coal	445.	361.	497.	380.
Analysis of Sparks.				
P. ct. of fixed carbon	61.74	64.88	71.32	76.44
P. ct. volatile matter	4.36	4.16	3.45	3.29
P. ct. comb. moisture	1.82	1.82	1.66	1.86
P. ct. ash	32.08	29.14	23.57	18.41
Sparks.				
Lbs. caught in front end during test	75.	213.	494.	566.
Lbs. passing out of stack for test	294.	358.	278.	492.
Total lbs. of sparks for test	369.	571.	772.	1,058.
Lbs. of sparks per sq. ft. of grate per hr.	3.5	7.3	14.7	41.0
Lbs. of combustible in sparks for test	242.	395.	576.	837.
P. ct. of fixed carb. in sparks dry and free from ash	94.	94.	95.	96.
Approx. B. T. U. per lb. of sparks	9,870.	10,360.	11,200.	11,880.
Lbs. of coal equiv. in heating value to 1 lb. of sparks	0.75	0.80	0.86	0.91
Lbs. of coal equiv. in heating value to total wt. of sparks for test.	277.	457.	664.	963.
Lbs. of water evaporated per lb. dry coal.	6.94	6.60	6.30	5.58
Equiv. evaporation from and at 212 deg. F	8.26	7.87	7.52	6.67
H. P. of boiler	257.	248.	226.	201.
H. P. per sq ft. of grate.	15.	19.	26.	47.

of coal, which will be found in the table of observed data.

Attention may be directed to two important facts. First, the large percentage of oxygen shown indicates a supply of air greatly in excess of that required for combustion; second, the absence of carbon-monoxide (CO)

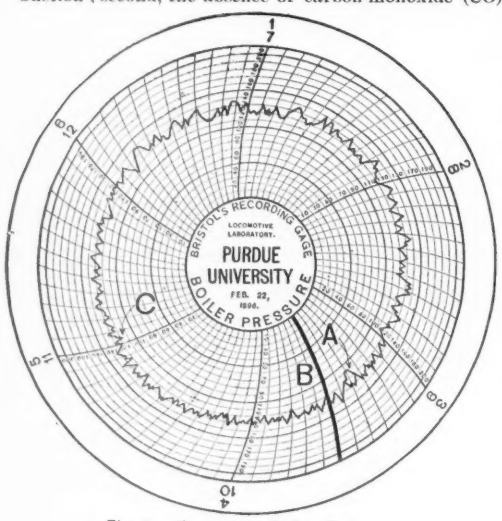


Fig. 1.—Record of Boiler Pressure.

in all excepting the last test. The presence of CO in the smokebox gases is accepted as proof of imperfect combustion. This gas occurs only in Test No. 4. It has long been supposed that its formation is due to thick firing, and its failure to burn after it is formed to deficient air supply, or to a temperature too low to ignite it. Upon this theory, its presence in Test No. 4, and its absence in the other three, are difficult to explain. In contradiction of the old theory, however, Herr R. Ernst has recently shown that the amount of this gas formed in the combustion of carbon depends upon the temperature of the fire; or, more specifically, when the temperature of the fire is above 1,800 deg. Fahr., the first process of combustion is the entire conversion of the carbon into this gas. He has also shown that this gas will not burn, even in the presence of air, so long as its temperature is above 1,800 deg. Fahr. The relation of grate surface to smokebox volume, during all but the first test, gave conditions which more nearly satisfy those prescribed by Herr Ernst than would exist had the same rates of combustion been maintained on a full grate. The rate of combustion maintained in Test No. 4 was higher than any which can be found in practice, a condition which would tend to neutralize the advantage of a large firebox. But, theory aside, the facts remain that the tests show very small losses by imperfect combustion, even when the rate of combustion is highest.*

Conclusions.—The results show that the most efficient furnace action accompanies the lowest rates of combustion; and while the precise relationships established by the experiments may not hold for fuel which is different from that employed, nevertheless they enforce the general conclusion that very high rates of combustion are not desirable, and, consequently, that the grate of a locomotive should be made so large that exceptionally high rates will not be necessary. They emphasize, also, the importance of spark losses, which, during the experiments under discussion, practically equaled in value all other losses occurring at the grate.

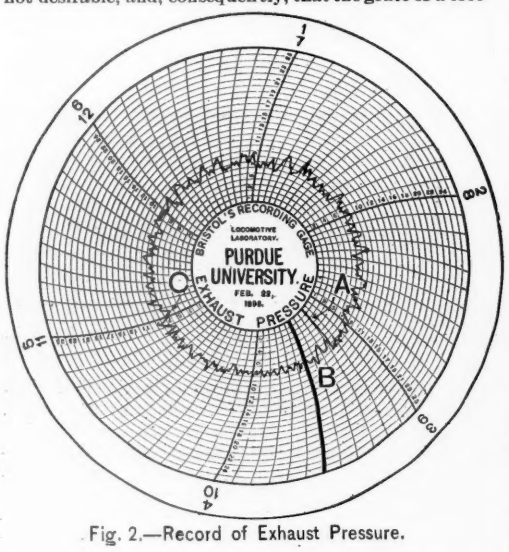


Fig. 2.—Record of Exhaust Pressure.

Assuming that the results obtained from the experiments can be applied to the locomotive "Schenectady" when working under *normal* conditions, we find that the losses in evaporative efficiency which occur when the rate of combustion is increased above 50 lbs., may be accounted for approximately as follows: The relation between the rate of combustion and the water evaporated per pound of coal, under normal conditions, is represented by the line *a b*, Fig. 4. If it could be assumed that the heat developed in the furnace would be absorbed with the same degree of completeness for all rates of combustion, the evaporation would rise to the line *a c*; if, in addition to this, it could also be assumed that there were no spark losses, the evaporation would rise to the line *a d*; finally, if, in addition to these, it could be assumed that there were no losses by the excessive admission of air, or by incomplete combustion, then the evaporation would remain constant for all rates of combustion and would be represented by the line *a e*. That is, with the boiler under normal conditions, the area *a b c* represents the loss occasioned by deficient heating surface, the area *a c d* that occasioned by spark losses, and the area *a d e* that occasioned by excessive amounts of air and by imperfect combustion.

Master Car and Locomotive Painters' Convention.

The 27th annual meeting of this association was held in New York Sept. 9, 10 and 11. The address of President C. E. Copp (B. & M.) was one of much interest. He had not been unmindful of the demands required of the Executive Committee, and if errors had been committed, stated that they did not come from the heart. His labors to interest foremen car painters had been continuous throughout the year and the large attendance at the convention was a proof that the results of his labor had not been entirely in vain.

Recommendations were made to revise the constitution so that the hours of the sessions should be from 9 a. m. to 1 p. m., or else change from two sessions a day to one long one and that a four-day meeting be considered. The President suggested that in place of separate or conflicting reports by each member of the committee, a printed report ought to be given, this to be printed and distributed before the convention opens so that the members may be better prepared to discuss it.

The roll call showed 117 members were in attendance at the meeting. The Secretary and Treasurer's annual report gave an increase in the membership of 28 since the last report, but 41 were dropped for non-payment of dues, leaving the present membership 168.

The receipts of the treasury at last report were $557.22, and the disbursements were $451.96, leaving a balance of $105.26.

All the old officers re-elected, as follows, for the ensuing year: President, Chas. E. Copp, Boston & Maine R. R., Lawrence, Mass.; First Vice-President, C. W. Mason, Penn. R. R., Altoona, Pa.; Second Vice-President, L. B. Vail, Erie R. R., Buffalo, N. Y.: Secretary and Treasurer, Robert McKeon, Erie R. R., Kent, O.

"The Application of Compressed Air in Burning off Cars" was thoroughly discussed. The committee consisted of J. R. Cassie (L. S. & M. S.), G. H. Worrall (B. & M.), and Henry Block (C. C. C. & St. L.). The papers read were by men who were using compressed air in their shops. Mr. Worrall described the plan of piping their shops with gas and air. The main gas-pipe, which is a 1¼-in. pipe, running the whole length of the center of the shop. Every 12 ft. a ⅜-in. pipe extends down within reaching distance from the floor and has a T for two burners. Two feet from the floor is a swivel-coupling, so that it can be turned up out of the way. The main air-pipe, which is a ¾-pipe, runs along the side of the main gas-pipe, with intersecting ⅛-in. pipe midway between the ⅜ in. gas-pipes, making the air-pipes 24 ft. apart, then the burning-off hose is attached to both gas and air pipes: the hose from the air-pipe and gas-pipe are quite short and are brought together near the pipes, so that you have only one hose in your hand, and that can be any desired length from 10 to 50 ft.

Gas is procured from the city gas works and the air from two air-cylinders that are used on locomotives situated in the boiler room. There are two points in favor of air and gas. The first is, you get a continuous blue flame, which is very hot and blisters the paint at once; the second is, you get no smoke or heat in your face, the gas is all consumed and leaves nothing to smoke.

As all shops have not the convenience of gas, Mr. Block described his plan, which consisted in placing a gasoline tank outside the shop where there was no danger and piping the shop in a similar manner as described by Mr. Worrall. A saving of 20 per cent. is made by burning with compressed air over the old method by the use of lamps.

The second subject was "The Flailing of Varnish on Cars and Engines." The committee consisted of Robert McKeon (Erie), B. F. Murphy (W. & W.), and W. E. Hibbard (B. & A.).

The reading of the papers by the committee and the animated discussion which followed brought out the fact that the failing of varnish was due to an absorbent formation caused by the car standing out in the hot sun before being thoroughly dried, and to using a slower-drying varnish. To retain and improve the luster when in service a cleaner should be used having for its base linseed oil. A good rubbing varnish would, to a great extent, prevent the trouble, and some use a varnish color to prevent the sinking in of the finishing varnish.

The third subject, "Is it Advisable to Paint Locomotive Jackets, Planished Iron or Black Steel? If it is, Which is the Best and Most Economical Method?" was presented in reports made by W. J. Josenhan (P., Ft. W. & C.); C. W. Mason (Penn.), and T. H. Soley (L. V.). The substance of the discussion was that a large number of roads were using planished or Russian iron for covering locomotive boilers. It does not require painting until the enamel is worn off or becomes damaged from heat. The formula which is recommended by the committee is prime metallic lamp black and Russian blue mixed with four parts rubbing varnish, two parts turpentine and one part coach japan; apply two coats of the mixture and one coat of rubbing varnish. This gives a color in imitation of Russia iron. Mr. Soley said that he obtained the best results with a mixture of ⅛ lb. dry lamp black, 1 pint boiled oil, thinned with 1¼ quarts rubbing varnish, ½ pint turps and ¼ pint Japan gold size.

"Painting Galvanized Iron" was next discussed by E. A. Cole (J. G. Brill Car Co.). The paper treated of the causes for iron rusting. Samples of iron were exhibited to show the durability of different mixtures. The pigment does not enter so much into the question of durability, and only those pigments should be applied which will resist the moisture and prevent rusting and sealing. The fifth subject, "Can a Coach Body be Painted to Meet the Necessary Requirements with Four Coats of Paint; or, as Otherwise Termed, the Enamel Process?" was then taken up by F. S. Ball (Penn.) and C. E. Copp (B. & M.), who read valuable papers, after which there was a lengthy discussion. Many had tried the new or cheap method, but none would recommend its adoption. Attempts had been made to clean coaches painted according to the new method, but the color came off in the washing.

The sixth question was, "The Practical Painting of a Locomotive." The committee consisted of T. M. Dunlap (B. & O.); D. A. Little (Penn.); Thos. Jones (C. P.), and C. A. Cook (P., W. & B.). Their reports were of a practical nature and full of interest. Mr. Little referred to the painting

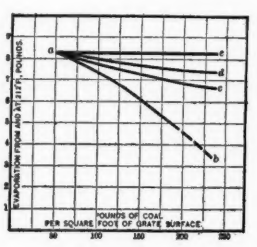


Fig. 4.

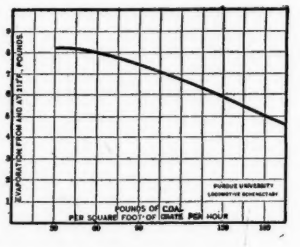


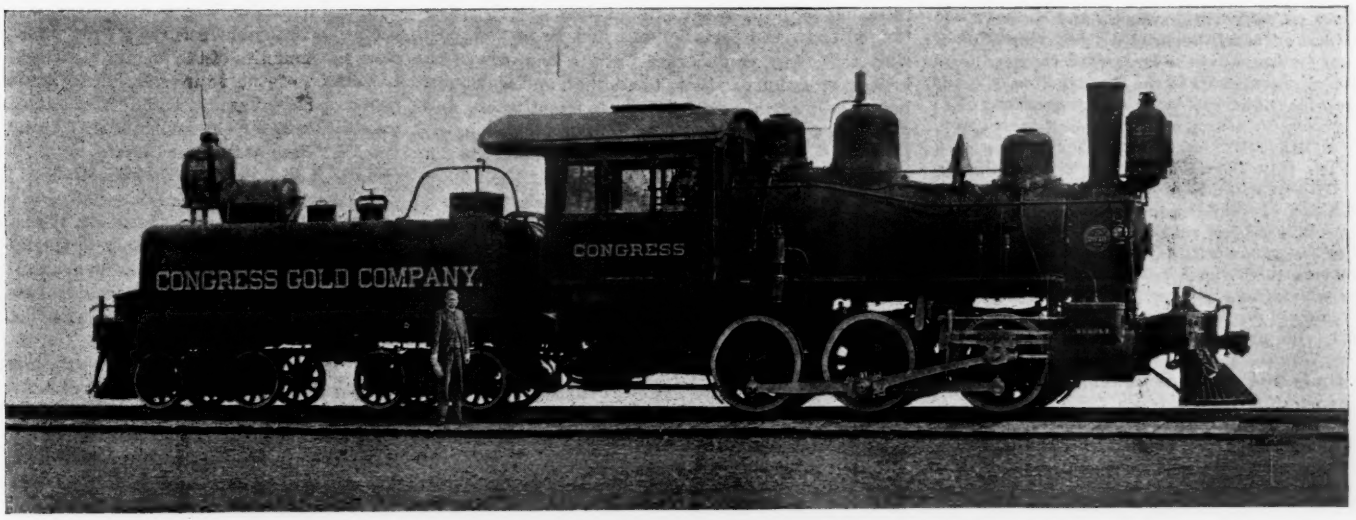
Fig. 3.

of the earlier locomotives, and stated that they were valued as much for their embellishment and artistic finish as for their ability to pull cars. Painting locomotives in the earlier days was done at a great expense, often running as high as five or six hundred dollars. The cost of painting at the different shops in various parts of the country was now being done at an average of $68.68 for passenger engines and $59.88 for freight engines. Mr. Jones gave detailed methods of painting on the Canadian Pacific. On that road the work was being done at less cost than formerly, time was being reduced, and quick drying colors had to be used which lessened the durability. Mr. Cook said the locomotive painter is compelled to a large degree to put behind him

* In a list of nine analyses of locomotive smokebox gases, selected by Mr. Kent from a large number made by Mr. P. H. Dudley, three exhibit CO. The amount varies from 1 per cent. to 2.5 per cent.

that justifiable ambition to produce a thing of beauty, and adapt himself to such methods as will give the best results and provoke little criticism.

J. A. Gohen (C., C., C. & St. L.) then took up the question, "Is it Good Policy to House Passengers Cars at Terminals? If so, Can Our Companies Afford It?" Mr. Gohen said that a car in service is better than the one standing on the side track exposed to the weather, and that the railroad managers are amiss in the direction of housing their cars. We spend $2,500 per month for repairs and cleaning at one of our terminals. If 10 per cent. would be a reasonable saving this means that the amount would in a few years provide sheds at terminals to house, repair and clean our coaches; it would also better the physical condition of the employee.



Oil-Burning Freight Locomotive for the Congress Gold Company.

Built by the BROOKS LOCOMOTIVE WORKS, *Dunkirk, N. Y.*

"Which is the Best Method of Painting Superheated Parts of Locomotives?" was reported on by the committee, consisting of A. J. Bishop (N. P.), A. P. Dane B. & M.), Aug. Wolter (L., N. A. & C.). Papers were presented which entered in detail into the methods in general use where special paint has required different from that used on other parts of the engine or tank.

The ninth question, "Which is the Most Economical and Durable, a Sand-paper or a Pumice Stone Surface?" was answered by G. R. Cassie (L. S. & M. S.) and W. T. Leopold (of Georgia). Both read excellent papers on the subject. A general discussion brought out the fact that some shops had discarded the pumice stone and used sand-paper, but a large majority were still rubbing down with pumice stone and water, as they were required to get a fair surface which could not be obtained with the sand-paper. The cost of this finish over the sand-paper finish was not over $12 per car, and when the car returned to the shop for cleaning and varnishing it cleaned much easier and the varnish held out better on the surface, it being more solid and smooth than the car with the sand-paper finish.

The last subject, "Spontaneous Combustion in the Railway Paint Shop, its Cause and Prevention," was reported on by W. O. Quest (P. & L. E.). He pointed out what great care should be exercised with cotton waste and clips of wood that are in the shops.

The Committee on Tests made a joint report exhibiting wood and iron painted panels to show the durability of different material as applied to cars and engines.

The next convention will be held at Old Point Comfort, Va.

Shumway's Ball-bearing Car Journal.

The accompanying illustrations show a journal with ball-bearings, devised for passenger and freight cars, by Mr. W. M. Shumway, of Chicago, formerly with the Chicago & Northwestern.

A hardened steel collar, *A*, is keyed securely to the axle. Collars B^1 and B^2 are movable longitudinally on the axle, but are made to rotate with the axle by means of a feather. Collars C^1 and C^2 are loose within the oil box, and separated from B^1 and B^2 by the three rows of 1-in. hardened steel balls. The collar *D* is secured on the axle; it forms one of the bearing surfaces, and is adjustable. It is locked in the position by means of a washer *E* containing a feather which prevents turning on the axle. Collar *F* is a lock nut which is kept in place by means of a cotter pin.

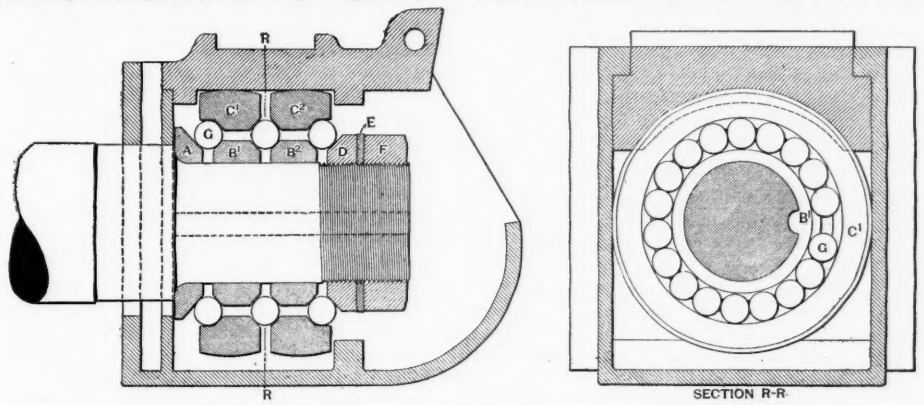
The oil box is made in two pieces, which are held in position by the jaws of the pedestal, and may be removed by jacking up the car ½ in. The box is tight, and only sufficient oil is used to allow the balls to pass through at the lowest point in their revolution around the axle.

The collars are of high carbon steel, carefully tempered, having their bearing surfaces turned at an angle of 45 deg. to the axis of the axle.

This arrangement requires no change either in trucks or dimensions of axle.

It is claimed with this arrangement that hot boxes are prevented and journal friction reduced 90 per cent.; the use of waste is unnecessary. Any wear of the parts can be taken up by means of the adjusting nut *D*.

The steel balls have been tested under a load of 50 tons and have not been crushed, while the maximum load on one ball in service with a 50-ton car is but 2,000 lbs. In case a defective ball should break, the pieces would fall out and not interfere with the working of the others. It is claimed that this bearing will give good service with the minimum of care.



Schumway's Ball-Bearing Car Journal.

Brooks Oil-Burning Locomotive.

The accompanying engraving illustrates the locomotive "Congress" built by the Brooks Locomotive Works, of Dunkirk, N Y., for the Congress Gold Company, Prescott, Arizona. Crude Petroleum is used as the fuel. The boiler of this engine is 56 in. in diameter and steam is used at a pressure of 180 lbs. per square inch. The total weight of the engine is 112,000 lbs., all on the six drivers; the tender weighs 86,000 lbs., and the gage is 4 ft. 8½ in. A few of the other dimensions are given below:

Wheel base, total, of engine	11 ft.
" " driving	11 ft.
" " total (engine and tender)	40 ft. 6 in.
Drivers, number	6
" diameter	51 in.
Cylinders, diameter	17 in.
Piston, stroke	24 in.
Tubes, number	226
" diameter	2 in.
" length over sheets	11 ft. 1 in.
Firebox, length	6 ft. 6 in.
" width	3 ft. 8 in.

New York Street Railway Association.

The fourteenth annual meeting of the Street Railway Association of the State of New York was held in Binghamton, Tuesday, Sept. 8, 1896. Thirty-two delegates of street railroad companies in New York state were present besides sixty other gentlemen, representatives of manufacturing firms, etc. President G. Tracy Rogers, of Binghamton, in his annual address, said:

"The past year has not been marked by any startling or radical changes in the street-railway world. The same tendency toward better building seems to prevail. The extension of roads into the country, the construction and adoption of high-speed motors and larger cars, and the rolling and laying of 60-ft. rails have all been tried successfully. The exercise of greater care in providing for the return current is to be observed, but perhaps the most important advance is in the universal adoption by large plants of the direct-connected generators; indeed, I am informed that over 80 per cent. of the generators produced during the past year are of this character.

"The experience of the past year has demonstrated that where very long lines of street railroads are to be operated, power can be economically delivered 20 miles or more from the power station by the three-phase system and the use of high-tension current. The experience of the past year has also demonstrated that with direct-current machines, longer lines than we had previously supposed can, by the addition of boosters, be operated economically. Some 15 or 20 different roads in the United States are now using this system.

"From the Railroad Commissioners' report of 1895, I find that it has cost all roads of the state 91½ per cent. of their gross receipts for operating expenses, interest, taxes and rentals. Ninety-one and one-half per cent. of the five-cent fare we receive is 4 cents, 5¾ mills, leaving but 4¼ mills profit for dividends. In New York one can legitimately ride 12½ miles for five cents; transportation .004 of a cent per mile; in Brooklyn 18 miles, transportation .0028 per mile, and in Buffalo 13¾ miles, transportation .0037 per mile. The street railroads in the State of New York to-day afford the cheapest transportation in the world.

"The question of fenders is still confronting us, and is a most perplexing problem. It is stated that there are upward of 4,000 patents on the market. It is the opinion of many street-railroad men that the fender is a menace. The street railroads are anxious that the state should share some of the responsibility. I stated last year, and still believe, that the best fender for the front end of a car is a clear-headed motorman.

"No question is of greater importance than that of having some definite standard as regards the rating of motors and generators, and as regards the features involved in the application of the same, such as diameter of car axles, wheels, height of car body from track, etc. The steam roads of the country have done much toward fixing standards, and rendering interchangeable material and parts. This gives to the railroads, aside from all other advantages, a cheapened cost to the the manufacturer, and consequently to the road, due to the reduction of the number of different parts and sizes. These and many other points which will suggest themselves apply even more forcibly to the street railroads than to steam railroads."

The Executive Committee recommended in their report that at the next annual meeting two days should be devoted to the convention in order that one whole day may be given up to the business sessions and the next day to the entertainment of visiting delegates and guests. The report of the Treasurer showed that the receipts during the year amounted to $6,998 and the expenses to $6,701, leaving a balance of $297.

The first report taken up was presented by Mr. J. H. Steadman, Transfer Expert, Rochester & Iron Doquoit Railway Co., Rochester, on "The Matter of Transfers." Mr. Steadman advocated a liberal transfer system and cited cases where such had proved to be profitable. In Baltimore a transfer system was tried three years ago, and after one year's experience a more liberal transfer system was adopted. The report dwelt at some length on the question of ringing up transfers.

Mr. Moffat, General Manager of the Syracuse Rapid

(*Continued on page* 657.)

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At 32 Park Place, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

With no foundation that we have been able to discover, many of the newspapers and the speakers who advocate the free coinage of silver make charges of coercion against corporation officers who have publicly given information and advice to their employees. The ill effect of such charges proceeds entirely from the making of them and the creation of an impression that the prosperity of the employer is not essential to the ability to pay salaries and wages. This impression is to be feared so long as there are demagogues and reckless writers; but it must not be feared to the extent of preventing any corporation officer or any patriotic man from speaking and writing temperate advice to those who have a right to expect it from him. It is the office of a railroad company to make and sell transportation. It is the high duty of its officers to guard the interests of the stockholders and the welfare of the employees. When it is plain that the rates of transportation cannot be increased and that wages ought not and must not be reduced, the proposition to substitute fifty-cent dollars for one hundred-cent dollars becomes absurdly easy to answer. But it must not be assumed by any executive officer that because, by reason of his knowledge of financial history and his daily familiarity with business problems, the suggestion of partial repudiation as a relief from debt, and the adulteration of the currency as a creator of business, is, to him, clearly dishonest and disastrous, that it will at once so appear to those who are less well-informed when plied by agitators. He has the absolute right of free speech and he has a duty to perform from which he must not be deterred by the prospect of misrepresentation. The example set by Messrs. Fowler, Ingalls, Kendrick, M. K. King, Miller, Ashley, Comer and many other railroad officers, as well by Charles Hansel and other railroad manufacturers, is worth following. Better and fairer, however, than a circular letter or a newspaper interview is the method of meeting the men at the shops or at their usual gathering places and making a short address to them. Invite them to reply and ask questions, and convince them that individual opinion has no possible connection with tenure of employment. Furthermore, an officer cannot fail to broaden his views and better his judgment by such frank contact with his employees, who are his fellow-men.

The Southern rate-war, begun about the middle of July, suspended soon after by a temporary injunction and then resumed the first of this month when the order of the court was annulled, has now been stopped by another injunction, this time on the ground that the very low rates from the North to Atlanta constitute an unreasonably large and therefore unlawful discrimination against Augusta, Macon and other cities. The order was issued by Judge Emory Speer, of the United States District Court, at Augusta, Sept. 10, and is based on the third section of the Interstate Commerce law. The complaint was made by the Wholesale Grocers' Association of Augusta. The order is returnable Sept. 24. It will be remembered that the former injunction was dissolved on the sole ground that some of the roads vitally affected had not been called in as defendants. It is to be presumed that no defendant has been omitted in this case; and the ground for demanding intervention by the court is now more specific, the plaintiff having a good *prima facie* case of disobedience of the third section of the Interstate Commerce law; but yet the essential difficulty remains, that to afford relief the court must either undertake the task of holding *up* one set of rates, which involves a grave interference with freedom of contract, or of reducing another set of rates and thereby putting them below the basis where the railroad can be operated without loss. If the question of territorial jurisdiction could be settled, possibly the court could order rates to one city to be kept down as long as those to another, and no longer; but as railroad rate-experts have to spend weeks and sometimes months in clearing up tangled questions of this kind, it will probably be a puzzling problem for the court. The question of territorial limits interferes, indeed, with the efficacy of the temporary injunction, the railroad officials being uncertain, if we may judge by their remarks to the reporters, what rates to restore and what to leave untouched. If the suit is only to right the wrongs suffered by Augusta and Macon it apparently must lie only against the Southern, for the Seaboard Air Line does not run to those cities. It is impracticable to give any clear statement in detail of what rates have been reduced, or of the percentage of reduction, for the railroads seem reluctant to make the reductions and not at all disposed to give out clear information about them after they are made. The original dispute, that between the boat lines on Chesapeake Bay, has been taken into court, the Bay Line suing the York River Line for $150,000 for an alleged violation of an agreement for the division of territory entered into by the two companies on Jan. 11, 1877. The York River Line claims to have abrogated the agreement by a notice given in 1881, but the Bay Line officers say they have no record of such notice. The Railroad Commissioners of Virginia and of North Carolina have ordered the roads to reduce intra-state rates in the same proportion that they reduce through rates.

The Block System on Single-Track Railroads.

Two announcements just made in the *Railroad Gazette*, one last week and one this, should be of special interest to all superintendents and other officers operating single-track roads, as they tell of simplification of the methods of securing safety and economizing time on such roads, and ought therefore to promote the safe and prompt movement of trains. We refer to the apparatus for delivering a small bag to an engine or caboose running 50 miles an hour, and to the modification of the Webb & Thompson staff, described at Niagara Falls by Mr. Hansel, whereby the thing given to the engineman to authorize him to run over a certain piece of single track is made so small that it can be put into one of Mr. Mozier's order-pouches and delivered to the engine at any speed. These are not radical inventions, for Mr. Mozier's device is only an elaboration of the familiar mail-bag apparatus, and the Webb & Thompson improvement only does what Tyer's similar apparatus did long ago; but the two, taken together, bring these improved facilities more directly to the attention of American railroad officers and, we may hope, will lead to more thorough consideration of the question of decreasing the care needed to run trains safely on single track.

Indeed, it would not require an extraordinary imagination to erect, on this foundation, an argument of considerable force on "The Dispatcher Deposed." The regular enforcement of space intervals on a single-track railroad makes the movement of trains toward each other on such a railroad perfectly safe from butting collisions, even where a dispatcher, by mistake, gives conflicting orders; for the space interval regulations keep all trains one station apart, regardless of their time-table rights or of any rights given by the dispatcher; and, this being so, the dispatcher need not be a picked man in every case. Meeting orders can be issued by any officer familiar with the road and the movements of trains, and the necessity, now universal, of having a carefully trained and thoroughly experienced man on duty every minute of the 24 hours, never over-worked or distracted by other duties, and always alert, will be largely removed. We do not say this because we are in favor of any letting down of the standard of skill and vigilance in the dispatcher's office, for there is need of all the ability now available, and more, to properly handle trains, even when the details of issuing orders shall have been simplified; but the possibility of the change which we have mentioned suggests that dispatchers may not always be required to expend their energies in the same direction that they now do. The introduction of methods by which meeting orders may be safely issued without repeating them and without writing out more than a very few words for each order, is a relief due to the dispatcher as soon as it is possible to afford it, without regard to any saving of money.

For a road with facilities such as to justify the superintendent in making all his meeting points, both regular and irregular, at telegraph stations (making exception only in such infrequent cases as can be dealt with by a special form of order), an electrical blocking apparatus like the Webb & Thompson is a simple and valuable instrument. It greatly ameliorates the anxieties of the man or men responsible for the safety of the train movements and it makes friends for itself among trainmen and all concerned. In addition to the experience of the Chicago, Milwaukee & St. Paul in this line (described in the *Railroad Gazette* of May 10, 1895) we have that of the Chesapeake & Ohio. That road has had two pairs of the Webb & Thompson pillars in use a year or two and the officers of the road commend the apparatus in strong terms. On the C. & O. the apparatus is interlocked with a semaphore so that unless a staff is out, ready for a train, the semaphore cannot be lowered for that train.

The officers of the Erie lines have already found great satisfaction in the practice of delivering train orders without stopping the trains, and this even without the Mozier apparatus, and while the speed still has to be reduced to a pretty low rate. Even so low a rate as 15 miles an hour is a great improvement over making a full stop. With the staff system and means of delivering staffs to all trains at any speed, a positive meeting order, requiring no writing and no reading, is given to every train at every station. This is done with less loss of time than by our former methods, and yet the principal instrumentality employed is a thing which we Americans have long looked upon as an old fogyish English device fit only for the backwoods and for the "slow" railroaders of India.

The use on single-track roads of the block system—or, if that term is regarded as lending too much dignity to a scheme which is still imperfect, the space interval—continues to give, so far as we can learn, increasing satisfaction. The gradual improvement on the Erie, described by a superintendent of that road and reported in the proceedings of the Superintendents' meeting in another column of this paper has been duplicated on other roads. This was to have been expected, as the practical application of the space-interval principle seems always to strengthen the enthusiasm of the officers and trainmen who use it, and to lead them to make intelligent efforts to advance their standard of efficiency. Absolute blocking is so much more satisfactory than permissive that all concerned, seeing this, are ready to take concerted action to reduce permissive practice as much as possible. The Chesapeake & Ohio, single track, has made excellent records in this respect, the prohibition of permissive signals having been enforced, without serious delays to the trains, even when the movement of freight was heavy. In all ordinary times this prohibition is enforced with no friction at all and the exceptions, all of them recorded, are exceedingly few.

The last startling collision on single track—that is, the last one which would be classed as of the first magnitude, that at Logan, Ia., July 11—was due to a cause which enforces all of the arguments in favor of the block system for single-track roads. And the fact that this collision occurs now, after three years of what may be called great improvement in the personnel of the train service, improvement by the weeding out of the less efficient men and the education of the men remaining by the well-known sobering and enlightening processes of adversity, remind us that a long period of immunity is a dangerous ground, taken by itself alone, for confidence that the time-interval system is any safer than it used to be.

Train-Men's Eyesight.

Once more the alleged injustice of examinations for defective vision is being made the subject of public grumbling by enginemen and trainmen, this time on the New York Central, and of course the local newspapers, true to the "journalistic" instinct, which says that every matter concerning the welfare of "labor" must be exploited at the greatest possible length, try to print everything that any fireman or brakeman says on the subject. It appears that the Central sends all its men for examination to New York City, even from as far as Buffalo; and that of itself is enough to produce some little excitement if a man is already a bit nervous over the

possible loss of his job, though in reality the action of the company in having all examinations made by the same oculist, instead of engaging several local physicians, who may differ in skill, should be an advantage to the employees.

From accounts in Buffalo and Rochester papers we judge that most of the anxiety is occasioned, not by color-blindness, but by the alleged unjust treatment of men who are near-sighted or who can see farther with one eye than with the other. A man who is taken out of the train service and set at work in the shops or on a switching engine, because he cannot read fine print at a sufficient distance from his eyes, complains that that is not a practical test, claiming that such an experiment throws no light on his ability to distinguish signals half a mile away or to see a horse on the track two miles off. It is hardly supposable that the firemen or brakemen of the Central, or the reporters who recount their woes for a sympathizing public, are so ignorant as not to know better than this, but the argument serves its purpose, no doubt, of letting the public know that the employer is believed to be trying to do the employee an injustice. In point of fact the injustice, if there has been any, has been in allowing men to continue in the train service until the year 1896, when they were not fit for it. In this the company was unjust to the public, to the employee and to itself; though as far as the employees are concerned there is no ground for complaint, for it is not imaginable that the short-sighted or color-blind person is ignorant of his own disability. (We say this advisedly, though the oldest inhabitant never heard of a railroad man with defective vision who owned up to the truth in the matter.)

In view of the large numbers of level-headed men that we see in the train service we are surprised, every now and then, in cases like this on the New York Central, to see to what a large degree the enginemen are governed by prejudice. It appears that some of the men on the western division went so far as to employ a Syracuse oculist on their own account, hoping that his opinion of their eyes would in some way cast discredit on that of the specialist employed by the railroad company. But, if we may judge by the newspaper reports, they got cold comfort, especially as regards their hearing, which the Syracuse doctor also tested. He is reported to have said:

"Any occupation in which continuous noises act upon the ear is apt to impair the function of the delicate portions of the auditory system. This is due to too great and prolonged stimulation of the auditory nerve, on account of the sudden condensation of sound waves on the drum membrane of the ear. The effect is similar to the fatigue of the optic nerve caused by prolonged exposure of the eye to direct sunlight, which, if continued, will lead to permanently impaired vision. Another symptom to which engineers and firemen are particularly liable is the condition known as tennitus aurium, a continual noise in the ear, which, as a rule, resembles the sounds with which they are most familiar, such for instance as the escaping of steam, the ringing of bells, and the workings of the air-brake. The dangers of railroad traffic which arise from such aural affections in engineers and firemen are very great, and it is for the public safety that such examinations are made compulsory."

And it is said that the doctor gave certificates to only about two-thirds of those who went to him.

The most effective antidote for prejudice is wider knowledge, and knowledge gained through a number of different channels often proves more enlightening than the same facts if received through too familiar instrumentalities; so it is cause for congratulation that these enginemen sought information from at least two sources. The railroad officer who tries to appease his men by acceding to their demand to be tested by dirty flags or other alleged "actual experience" when he knows all the time that such a course will probably do more harm than good, is making progress in the other direction; he is hindering instead of promoting true science.

The fundamentals of this problem are just the same now that they always have been. Color blindness is a congenital defect and is incurable. The man who is born with it must submit to its limitations as long as he lives, and it is wrong to try to deceive himself or others into believing that there is any escape from this condition. Some individuals suffer under greater disabilities than others. Some are more skillful than others in picking out different colors of yarns by touch; or in distinguishing signals by the intensity of the color, but a true color-blind person is never sure to select either red or green correctly. The true method of detecting color blindness is to test the subject with the colors to which he is blind, and with "confusion colors," a sufficient number of times to provide against the possibility of his making right selections by chance. Scientific tests are made in accordance with this principle. They do not require men to name the colors or to study the art of millinery. They do not require a man to name any color; he may even be dumb and yet comply with the essential requirements. They have never unjustly decided against an old employee. If any such employee has been unfairly treated it was from lack of a proper system, or from careless use of it. The same is true of examinations for shortsightedness.

Gross Earnings in August.

The earnings reported by those companies which publish weekly statements have pretty generally shown serious decreases in August, and have indicated an unfavorable statement for the month. This turns out to have been correct enough, for August gross earnings, as reported by the *Financial Chronicle*, were 2.61 per cent. less than the gross earnings of August, 1895. This is the first decrease reported in these monthly statements for a year and a half. An examination of the returns of the individual roads shows that the falling off is pretty general, for the smaller earnings are not reported from one or two sections only.

In fact, the earnings in August this year were less than in 1895 or 1894, in all the groups into which the roads of the country are usually divided, except those including the lines which have benefited from the large spring-wheat crop. The earnings for the month (125 roads) were $40,362,000, the decrease being $1,082,000. These roads operate 94,149 miles, or 736 miles more than the mileage on which the 1895 reports are based. More than two-thirds of the roads whose statements have been obtained show losses. In July about half of the lines had smaller earnings so that the unfavorable turn in revenues so long expected has been very sharp. In July an increase of $1,610,000 was reported, but five roads (all in the spring-wheat districts) accounted for over one million dollars of this increase.

The grain movement continued heavy, and on many roads has furnished a use for cars which, but for this traffic, would have stood idle. Indeed, the amount of general freight offered for shipment has been exceedingly small. Factories have been closing or decreasing output, so that roads in the manufacturing districts have been the heaviest losers in earnings. But, as stated, grain has been going forward in larger quantities. The receipts of the five most important cereals at the Western primary markets in the four weeks of August were nearly 48¼ million bushels, 16 million bushels more than the receipts in August, 1895. The increase was due to larger receipts of each commodity, though corn of course furnished much the largest share of the increase. The receipts of corn were 7 million bushels more than in August, 1895; receipts of wheat, 4½ million bushels more, and of oats nearly 4 million bushels in excess of 1895. The receipts of corn and wheat were each over 16¼ million bushels.

The reduction in the rate on corn made by the Joint Traffic Association went into effect on July 15, and lowered the tariff from 20 cents to 15 cents on corn from Mississippi River points to New York. Rate reductions in the West made the rate about 24 cents from the Missouri River to New York. The rates to New Orleans and Galveston were also low, and a large proportion of the traffic went to the Gulf ports. We have compiled from the *Chronicle* reports of various periods, brief statistics of the corn movement just previous to the time the rates were reduced, and to September 1, which have some interest as bearing on the influence of this low rate, which expires shortly. The table following shows the receipts of corn at Western primary markets for two years, for the periods named:

	1896.	1895.
May	6,512,000	8,782,000
June	9,264,000	5,440,000
Total, Jan. 1 to June 30	60,261,000	39,281,000
July	13,608,000	5,605,000
August	16,360,000	9,278,000
Total, Jan. 1 to Aug. 31	90,230,000	54,164,000

In the two months of July and August the corn shipments have been half as much in the whole of the first six months of the year, and in August, when the low rate was in effect the entire month, the receipts at the great Western markets were nearly twice as great as in the month preceding. The total receipts of the five important cereals, so far in 1896, has been over 302 *million* bushels. The receipts for the corresponding period in 1895 were 196 *million* bushels. Corn furnished 36 millions of the increase; wheat, 37 millions; and oats, 30 millions.

These heavy shipments have been made when the railroads have had little other freight to carry. They have been carried at low rates, which was necessary to induce any movement at all.

Besides the heavy grain traffic, there has been an unusually early and heavy movement of cotton, which, however, has not been enough to prevent a loss by the Southern roads, whose earnings had held up remarkably well this year. Southern ports received 180,000 bales in August, only 14,000 bales being received in that month last year. All the ports shared in this increase, but Galveston most of all—which increased in receipts 69,930 bales to 73,289 bales, the increase being more than the total receipts at New Orleans, 50,476 bales.

But larger grain and cotton shipments were the only favorable features of the month affecting railroad traffic and revenue. The marked immunity from rate disturbances which characterized the early months of the year, is at an end. The contest between the Southern and Seaboard Air Line was in abeyance in August, but there were disturbances in rates between Chicago and St. Paul and southwest of Chicago. The usual heavy iron and steel traffic has been largely lost. Ore shipments have almost ceased and freight from coal and coke, as well as the finished products, is very small. The last report of the *Iron Age* on pig-iron production shows the capacity of furnaces in blast as less on Sept. 2 than at any other period in the previous two years.

There were no very large increases by individual roads in August. Heavy increases by a large number of roads has been a feature quite marked in many previous monthly reports. In June seven companies reported increases of over $100,000, and in July 11 companies; in August only three companies, the Canadian Pacific, the Great Northern, and the Missouri, Kansas & Texas had such a large increase. Some of the decreases are heavy, the New York Central losing $265,000, the Wabash $210,000, the "Big Four" $138,000, and the Chicago, Milwaukee & St. Paul, $109,000. The Northwestern and the Pacific groups show small increases, $180,000 together, but this is due to the good spring wheat crop. The Southern group, which has been showing good earnings, now reports a loss of $142,000 on nine roads; but as the Southern had $109,000 decrease, and the Louisville & Nashville $80,000, there were improved earnings on other lines. The Southwestern lines had the smallest losses of any group—$76,000. There were large losses on some roads and gains on others. The roads in the manufacturing districts fared badly. The Middle and Middle Western roads have a decrease of $310,000, and the Trunk lines have lost $731,000.

Annual Reports.

Fitchburg.—The report for the year to June 30 shows gross earnings $457,000 (six per cent.) greater than in 1895 and larger than in any other year except 1893. Net earnings were $1,894,895, and were not so large as in a number of other years, for unusually large sums for improvements were this year included in expenses. The difference, however, between the net reported in 1896, and 1895, when the net earnings (expenses having been low) were the heaviest the company has reported, was not great, about $141,000. In one other year, 1892, net earnings were over two millions and about $118,000 more than the net in 1896. But in 1892 and 1895 operating expenses were low, 69.5 per cent. in both years, while in 1896 the ratio was 71.8 per cent. President Marcy comments on the year as being the most prosperous in the company's history. The full dividend has been earned, a larger amount than ever before has been charged to earnings for improvements, and a balance larger than in 1895 is left. The general results for several years follow, the income for years prior to 1895 including dividends on stock held in the treasury, no account being taken of these dividends in 1895 or 1896.

	1896.	1895.	1894.	1893.
Freight	$4,846,520	$4,552,608	$4,173,197	$4,945,723
Passenger	2,489,452	2,318,280	2,419,396	2,482,686
Other income	270,793	218,425	272,562	288,888
Gross earn.	$7,606 765	$7,149,313	$6,865,155	$7,707,298
Oper. exp. and taxes	5,711,870	5,202,425	5,038,170	5,768,472
Net earn.	$1,894,895	$1,946,888	$1,826,986	$1,938,826

The ton mileage is much greater than in any previous year; 45 millions greater than last year and 126 millions greater than in 1893, the two other years reporting large ton-mileage. The increase in tons carried over 1895 was 356,000, the total in 1896 having been 4,775,100 tons. Compared with 1893 there is an actual decrease—about 77,000 tons.

In reviewing the report of the Boston & Albany a few weeks ago, we found that the tonnage carried by that company in 1896 had decreased to 8.68 per cent. as compared with 1893, but the ton-mileage had decreased 9.57 per cent. The Fitchburg shows different results. With a tonnage 1.9 per cent. less in 1896 than in 1893, the ton-mileage is 4.9 per cent. greater. Evidently the company's through traffic has been gaining faster than its local traffic. This is shown in another way. The average freight haul in 1896 was 114 miles, which, though a little less than the haul reported in 1895, compares with an average haul of 108 miles in 1893. In 1892 and 1891 the average haul was still less, 104 miles in the earlier year. These figures are for practically the same mileage, the few lines added being short branches. The Boston & Albany does not give its average freight haul.

As the two companies are competitors for through traffic from the West a few comparative statistics will be interesting, as showing the progress of the two roads

in regard to this traffic between 1893 and 1896. The two periods were favorable, each company reporting a heavy movement in both years. It should be premised that the mileage operated is not greatly different, being 388 miles in both years by the Boston & Albany, and 447 miles in 1893 and 455 miles in 1896 by the Fitchburg. The figures are in thousands:

	Boston & Albany		Fitchburg	
	1896	1893.	1896.	1893.
Tons carried	4,122	4,514	4,775	4,872
Ton mileage	438,957	485,415	551.044	525,027
Through eastbound tons.	854 9	985	1,090.0	817.0
Through westbound tons	133.6	166.7	111.2	147.2
Total freight earn.	$4 134	$4,888	$4,846	$4,935
Gross earn. per mile.	24 056	26,164	16,608	17,123
Freight earn. per mile	10,636	12,576	10,582	10,968

These figures show that the relative positions of the two roads in the amount of through freigh carried has been reversed. Three years ago, the Boston & Albany carried 187,000 more through tons (eastbound and westbound together) than its competitor, but the Fitchburg in 1896 carried 1,101,000 tons against the 987,000 tons of the Boston & Albany. The loss on westbound freight is nearly the same for both roads.

The Fitchburg earned more from freight than the Boston & Albany in both years, a fact which we judge is not appreciated much outside of New England, and may not be known very generally there. Three years ago the difference was small ($47,000), but in 1896 the difference in favor of the Fitchburg had become $712,000. The Boston & Albany has a heavy passenger traffic, giving a revenue about equal to that from freight, while the passenger revenues on the Fitchburg are just about half its freight earnings. With its better passenger earnings and heavier movement of local freight, the Boston & Albany reports gross earnings per mile of road, nearly $7,000 more than the Fitchburg.

Freight earnings per mile of road show little difference on the latter road, although the ton-mile rate has fallen from .94 cent in 1893 to .88 cent. The ton-mile rate on through freight was .77 cent in 1893 and .72 cent in 1896. The decrease in freight receipts per mile on the Boston & Albany is quite marked.

The improvements made by the Fitchburg during the year in both equipment and maintenance of way have been considerable. Additions to freight equipment have included six engines, to take the place of old ones, and nine were an addition to the equipment; 50 additional 30-ton coal cars have been purchased, 100 box cars furnished with new bodies, and 150 30-ton cars provided for in the expenses for 1895 have been purchased or built; 24 engines have been equipped with driving-wheel brakes and 80 with automatic couplers, and 627 freight cars have been fitted with air-brakes and 1,233 with vertical plane couplers. Six new passenger stations have been built. Little new bridge work was done during the year. The erection of heavy bridges and the strengthening of old ones, which was a marked feature of the company's work for several years, being undertaken in anticipation of the use of heavier locomotives on the road, was completed a few years ago and the bridges on the line are now in excellent condition. Several new interlocking plants have been put up and new block signal apparatus has been put in at the Hoosac tunnel. Over 250,000 new ties have been used and 4,606 tons of 76-lb. rails. All of these expenditures have been included in the expenses for the year as well as the cost of consolidating the locomotive repair work at Keene, N. H., enlarging the shops and supplying them with new machinery, the cost of which has been $47,000 altogether. The work of eliminating highway grade crossings has progressed during the year, seven such crossings having been changed. The extension of double track and reduction of the grade at Reynolds, east of Mechanicville, on the Western Division, was begun last spring and is now about completed. This will result in a material saving in handling the heavy freight traffic on this division.

For several years past the company has been refunding its high rate bonds and during the year $500,000 of new 4 per cent. bonds were issued to refund high rate bonds. The company has not sold all of these bonds, but expects to dispose of the unsold balance at an early date. During the coming year the refunding operations will be continued, and the stockholders are asked to authorize the directors to issue the company's bonds for $2,750,000 to refund 2¼ million 4½ per cent. bonds maturing September next and $500,000 of 6 per cent. bonds maturing October next. These are the only bonds of the company which mature for some years.

New York, Ontario & Western.—The report for the year to June 30, 1896, issued this week, shows a slight advance from the low figures reported in 1895 in both coal and local freight and in passengers, but not in through freight. The year was closed with a surplus of $375,000, $49,000 greater than last year, and, excepting 1894, when there was a surplus of $420,000, larger than ever before. The general results of the year, with comparisons with 1895, were:

	1896.	1895.	Inc. or dec. p. c.
Freight earn.	$2,960,595	$2,908,035	I. 1.8
Pass. earn (inc. mail and exp.)	776,972	722,384	I. 7.5
Total earn. (inc. misc.)	3,779,336	3,669,113	I. 3.3
Oper. exp. and taxes.	2,698,558	2,642,412	I. 2.1
Net earn.	$1,080,777	$1,026,701	I. 5.2
Fixed charges	705,208	700,318	I. .6
Surplus.	$375,569	$326,383	I. 1.5

The proportion of working expenses to earnings shows a steady decrease in recent years. It was 68.4 per cent. in 1896; 69.2 in 1895; 68 4 in 1894; 73.1 in 1893; 72.2 in 1892; 73.1 in 1891, and 76.5 in 1890. Taxes are over $100,000 annually, about 3 per cent. of the gross earnings. Operating expenses this year show increases in all items except maintenance of way, and the decrease in that account is very slight, $2,550. Other changes are also small, an increase of $10,000 in conducting transportation, and of $32,000 in maintenance of equipment.

The percentage of these various classes of expenditure to the gross receipts in the last two years is shown in the following table:

	Maint. way.	Maint. equip.	Cond. transp.
1896.	12.5	12.3	40.1
1895.	13.1	11.8	41.1

There have been some changes in 1896 in the charges included in these accounts. The company has had motive power and maintenance of car accounts. These are now combined as maintenance of equipment, and many items formerly included in one or the other of these accounts are now charged to the transportation account. The proper changes have been made to enable comparisons with 1895, but they are not carried beyond that year.

The largest actual increase in earnings was in the milk traffic, the gain there being $44,000, or 11 5 per cent. This traffic has grown remarkably on certain roads leading into New York City in recent years. It now furnishes quite an important part of this company's earnings, the receipts in 1896 being $425,000, or 4½ per cent. of the freight earnings. In 1892 the earnings were $302,000, so that the increase in five years has been 40 per cent.

This traffic makes unusual demands upon the railroads. To obtain the increase reported has required attention to an unusual mass of details, such as no other traffic requires. Specially built cars, warmed in winter, and iced in summer, running on special fast schedules, are necessary. The cans have to be promptly collected and returned empty, which requires special agents who also watch the market and city trade in the shippers' interest Shipping facilities have been provided at almost every point along the line, and many creameries have been built by the railroad company, and leased at 10 per cent. rental. The rate is a uniform one of 32 cents for each can carried regardless of distance. This includes the return of empty cans and all services. The uniform rate has resulted in the development of a considerable traffic in counties which could not engage in the traffic if a rate based on distance were charged. A complaint questioning the justice of this uniform charge is now before the Interstate Commerce Commission, and its decision may have an important bearing on the future of this traffic. The rate of profit is small to the producer and to the carrier. Last year the traffic amounted to 12 million ton-miles, an increase of 11 per cent., and the earnings per train mile were $1.43 against $1.36 in 1895. The increase in milk traffic was nearly four times as great as any other item of freight.

General freight traffic was unsatisfactory both in through and local business, and the movement reported was obtained only by low rates, which on many classes are at the lowest possible point. Local freight revenue was $654,000, but $12,466 (1.9 per cent.) larger than in 1895. Coal revenue increased only $7,000, and there was a decrease in through freight earnings of $11,000, equal to 3.6 per cent. The revenue from coal was $1,581,000, and from through freight $303,000. General Manager Childs in his analysis of the freight movement, points out that when westbound differentials were abolished in April, 1895, the company had to compete with the stronger lines at even rates with a service to Chicago 24 hours longer. The differentials were not renewed until after lake navigation opened, and expire by limitation Nov. 30, 1896, so that the benefit to the company will be small. The long continued demoralized condition of the anthracite coal trade affected the revenues seriously, but the improvement begun in February has been felt in the last three months of the fiscal year, though prices realized at the mines are still little above the cost of production.

The passenger traffic has been marked by considerable increase in summer travel from New York. The traffic has steadily increased. In the three months to Aug. 31, 47,930 one-way passengers were carried from New York City to points south of Walton (180 miles from New York) 10 per cent. more than in the same months last year. Through passenger earnings were $29,000, 56 per cent. more than in 1895. The increase was in eastbound travel, and followed a quickening of the schedules of through trains in May, making them one-night trains between New York and the West.

The total ton-mileage last year was 356 millions, an increase of .82 per cent., and the ton-mile rate was .831 cent against .837 cent in 1895, and .931 cent in 1892. Passenger mileage was over 31¼ millions, 8 per cent. more than in 1895. The passenger journey increased from 35.1 miles to 36.9 miles, and the passenger rate from 2.06 cents in 1895 to 2.08 cents.

Earnings *per mile of road* show some fluctuations in the last five years, but on the whole a steady and considerable improvement in earning ability. Net earnings per mile are 5.7 per cent. better than in 1895. The following table gives the changes:

	1896.	1895.	1894.	1893.	1892.
Pass. earn.	$1,630	$1,515	$1,686	$1,745	$1,622
Freight earn.	6,210	6,099	6,286	5,914	5.151
Gross earn.	7,927	7,696	8,059	7,736	6,849
Net earn.	2,267	2,154	2,327	1,866	1,687

The passenger earnings per train-mile were 77 cents in 1896, 8.7 per cent. more than in 1895; freight train-mile earnings were $1.61, an increase of 2.58 per cent. All the statistics of the report indicate careful and capable management. The company's earlier history was unfortunate, but the present management, which has been in control 10 years, has brought the road from a deplorable condition, both physically and financially, to a point as to finances, where dividends are talked of by some, and as to physical condition, where comparison with other roads is very favorable.

The expenditures during the year on capital account were altogether $450,000, about $32,000 more than in the previous year. The largest item was for 250 coal cars; car trust payments on account of 1,350 other coal cars purchased in 1890 and 1893 were $88,000; four coal barges costing $69,000, two being for service on Long Island Sound, and the others ocean barges to run to New England ports, were built. During the year the Pecksport Loop Line, 3.8 miles long, which was fully described in the *Railroad Gazette* of May 22, has been built and was placed in operation this month. It saves northbound trains the haul over the long grade of 70 ft. to the mile at Eaton Summit. The cost of the road will be about $70,000, and Mr. Childs, the General Manager, estimates that its construction will save $10,000 a year. This estimate is on a basis of a saving of 17½ engine miles on 10 trains (the northbound traffic being estimated at 125 cars a day). The present engine haul of 500 tons north from Norwich to Oswego will be increased to 1,030 tons over the Loop Line.

President Fowler calls attention to a statement published in the report for 1893 showing in detail additions and improvements made in the five years to that date from the proceeds of bonds and net revenue. The total was over $3,935,000, and including the Scranton extension, various terminal property, yards and branches, the total was over 10 million dollars. In this report a further statement of such expenditures for the last three years shows a total of $1,408,000. Excepting equipment, the largest charge is that for rails ($109,000), representing the difference in weight of the new rails over those replaced; new bridges, trestles and culverts cost $107,000; stations and other buildings, $131,000; sidings, $53,000, and coal terminals and trestles, $88,000. Mr. Fowler states that within the last ten years it may be said that much of the main line between Oswego and Cornwall has been entirely reconstructed and brought to a modern standard, and the motive power and rolling stock have been to a great extent replaced and largely increased. The officers expect that with the continuance of the policy of improvement for a short time the expenditure of the entire surplus for additions and improvements will no longer be imperative. The present practice has been to charge the cost of all improvements to capital account, but the finances of the company now warrant some change in this repect, and this year many disbursements heretofore charged to capital will be included in operating expenses.

The reports for some years have been notable for the fullness of information given, and the intelligible comparisons which were either made in the reports or easily calculated. In this respect the report is one of the most satisfactory issued by any road.

A railroad without a Morse telegraph instrument in any of its stations or offices, not even the most important, is an uncommon sight in this country, so much so that most railroad men would call it a curiosity; but such, it appears, is to be the character of the new Queen Anne's Railroad, extending southeastward from Baltimore across Maryland and Delaware, east of Chesapeake Bay. This road is about 50 miles long and it is intended to use the telephone for all communications for which a letter by train would be too slow. Telegraph operators and the Telegraphers' Brotherhood will evidently find the climate in that region rather chilly. The use of the telephone for all necessary instantaneous communication is not entirely unknown in this country, however. Mr. C. A. Hammond described in the *Railroad Gazette*, several years ago, the practice on the short Boston, Revere Beach & Lynn road, where train orders were sent by telephone and perfectly satisfactory written copies and records were made. The Suffolk & Carolina road, extending 40 miles southward from Suffolk, Va., has depended on the telephone for 10 years. It is fair to say, however, that the number of train orders issued on that road is not very large. Only two regular trains are shown in the *Official Guide*, and the leeway way at the meeting point is 8½ hours; that is to say, the northbound train meets itself at the northern terminus, arriving at 9 a. m., and going back at 5:30 p. m.

The foregoing suggests the peculiar value which the telephone will have for the Chinese, who are likely to build more or less railroad during the next few years For the last half century the telegraph has been universally looked upon as an indispensable adjunct, if not an integral part, of the railroad, and it is conceivable that this fact might be one of the influences retarding the establishment of railroads in China, for the great number of characters in the Chinese alphabet makes it impossible to send messages by telegraph except by what is practically a cipher. That is, the Chinese characters are numbered and the numbers are telegraphed—obviously a most clumsy practice and very slow. When the question of employing natives in responsible positions comes to be considered there is a still greater difficulty in the fact that men of ordinary education are not sufficiently acquainted with the written language to do business by means of written messages. This, of course, is a great obstacle in operating trains by telegraphic orders, for educated Chinese, it is said, will not work for a railroad in the train service.

NEW PUBLICATIONS.

The Mineral Industry, Its Statistics, Technology and Trade in the United States and other Countries to the end of 1895. Vol. IV. Edited by Richard P. Rothwell, Editor of the *Engineering and Mining Journal*, etc., etc. Octavo, 850 pages, with numerous illustrations. New York and London: The Scientific Publishing Co. 1896. Price $5.

Our readers are probably already somewhat familiar with the aim and character of this work, for this is the fourth annual volume, and the three which have preceded it have been very successful both from the standpoint of the publisher and of the professional man. This work is said to be, and doubtless is, the only one published in any language that gives the statistics of the mineral industry of the whole world; and it is believed that the four volumes now issued form a complete encyclopedia of every branch of the mining and metallurgical industries.

By the plan of the work, the different minerals known to commerce and industry are taken up alphabetically, beginning with abrasives and continuing with aluminum, antimony, and so on. The first chapter of six pages gives a brief review of the minerals used as abrasives, their occurrence, preparation and qualities. Under aluminum there is a short review of progress in its production and consumption and of prices, the aim being to put the reader in possession of the most important events in the history of this mineral for the year considered. So each topic is taken up, the purpose being generally to give a review, technical, commercial and industrial, for the year. This is the first grand division of the work; the second division takes up mineral production by countries giving the statistics of production, imports and exports, in condensed form and grouped for convenient comparison.

Besides the strictly statistical portion of the work there are, however, special chapters written by a large number of contributors, some of them men of eminence in their special callings. Sir Lowthian Bell, for instance, has written a chapter on "Recent Proposals for Improving the Blast Furnaces in the United States." Dr. Borchers has a chapter on the "Progress of Electro-Chemistry and Electro-Metallurgy." Ritter von Ernst contributes statistics from Austria-Hungary and Bosnia. Mr. Worthington C. Ford contributes statistics. Mr. John Fritz, the distinguished engineer of the Cambria Works and later of the Bethlehem Works, writes on the "Past and Future of the Iron Trade in the United States." Mr. R. A. Hadfield, now managing director of the Hadfield Steel Foundry Co. and owner of the Hecla Works, Sheffield, contributes an article on "Alloys of Iron." Mr. Henry Marion Howe has a paper on the "Relative Corrosion of Wrought Iron and Steel." Mr. Wm. Nelson Page, a successful coal miner in Virginia, writes on "Coal Mine Accounts." Professor Richards, of the Massachusetts Institute of Technology, contributes an article on "Improvements in Ore Dressing." Mr. T. W. Sprague writes on "Electricity in Mining Work." It would be quite impossible to mention all of the special articles, or all of the contributors. We have endeavored simply to give a notion of how far abroad Mr. Rothwell has ranged to procure information, and what an effort he has made to cover completely the immense field which he exploits. Some notion of the scope of the work may be gained from the statement that the index fills 35 pages and contains many thousand separate titles. Of course the chapters on coal, on copper, on iron and steel and on gold and silver, are the longest, and seem to us the most important: but there is no branch of the mineral industry on which one cannot find fresh and useful information in this volume.

The Universal Directory of Railway Officials. Compiled from official sources by S. Richardson Blundstone, editor of the *Railway Engineer*. London: The Directory Publishing Co., Limited, 8 Catherine street, Strand, W. C. 1896. Octavo. Price, 10 shillings.

The chief changes which have been made in this, the second issue of this directory are the addition of some 150 railroads, chiefly in Sweden, Spain, Cuba and the United States; and in the particulars given of the Prussian State Railroads and the Russian State lines which have been greatly amplified. Altogether the additions have added about thirty-two pages to the directory. The personal index has been carefully revised. The publishers give warning, however, that as the information is gathered from all parts of the world it is not to be supposed that the book is absolutely free from errors, although they have taken every care to make it accurate.

Just a year ago we published a brief review of the first volume and the prompt appearance of the second volume, substantially bound in muslin and well printed, with at least half as many more pages of advertising, is evidence of material success. The book has many merits and as a directory of foreign railroads we know of no other which can compare with it in completeness and accuracy. The lists are very well arranged, so that they are conveniently referred to, and so far as we have had occasion to use the volume we have found it quite reliable. The list of railroads and officers takes up about 180 pages of the volume, of which the British lines have 40 pages. Other European railroads, alphabetically arranged by states, take up something over 50 pages Then follow the railroads of Asia, Africa, Australia, North and South America and Mexico, Central America and the West Indies, all arranged by states. This division is a very convenient one. The indices are of names of railroads (which extends over more than eight closely printed pages); names of officers and of countries, and a list of manufacturers is also given, which is of some interest and value.

The size of the volume makes it convenient to handle; the paper is of the thin but strong quality which we find so often in English publications, making it a pleasure to turn over the pages and reducing the bulk and weigh of the book. Typographically, also, the book is handsome. The type used is so clear that, though small, it is no task to scan it The names of the railroad companies are given in a lower case heavy-face gothic, and just beneath this line the mileage, gage and equipment owned is stated. Reference to the list of officers is particularly easy. The compilers have followed a suggestion which we have made for years to the publishers of railroad officers' lists in this country, and have used an italic type for the official title with the name of the officers in Roman type.

The list has but a few of the chief railroads of the United States, only about 120. There are but five companies named under the letter A, where the list in the *Official Railway Guide* has 40. When so few companies appear in the lists it is curious to observe among them such lines as the Virginia & Truckee, the Chester & Lenoir, the Des Moines & Kansas City, the Denver, Leadville & Gunnison, and the Sanford & St. Petersburgh, and others of small mileage and no prominence. There are very few typographical errors in the lists of officers of United States railroads. We have noticed only two or three. The euphonious Yazoo & Mississippi Valley is worse confounded as the Zazoo & Mississippi Valley in both volumes.

Proceedings of the Master Car Builders' Association. Vol. 30, 1896. John W. Cloud, Secretary. Rookery Building, Chicago. Price, $1.50.

The volume containing reports and discussions at the convention held at Saratoga, last June, comes to hand promptly at the the time we are accustomed to look for the report. This year, as last, the report has been substantially bound, but the binding of the present volume is in half leather and is a considerable improvement over that of the 1895 report. The body of the report is preceded by a list of places of previous conventions; the officers of the association; the standing committees; the subjects and committees for 1897; the members of the association and the railroads with which they are connected, and the constitution. The railroads represented by the membership, are not given alphabetically. Such a list would be frequently useful. The volume is much larger than previous reports, containing 531 pages. Appended to the report are drawings of the association's standards. There are 22 such sheets, but they are identified only by numbers and letters on the outside folded page. There are many occasions when a drawing of some standard of the association is required and it would be a considerable convenience at such times to have the title of the drawing on the folded plate with the reference number. As it is, it requires a good deal of time to find any special drawing. To unfold each plate, until the right one is found, takes time, and if the index of subjects is used no reference is found under "Standards." To look under "Recommended Practice" only occurs after several other titles have been examined. Even then the reference is to the page giving a committee report, and the plate having been identified, it is necessary to again turn to the back of the volume for the plate, which by having the title printed on it, might be made immediately available.

The editing of the volume, a thankless task at best, and a work which is hardly ever discoverable, has been well done. The type is larger than formerly used, the paper is better and the appearance of the volume enhanced in every way. Now that the proceedings are issued in bound volumes, there will be an inducement to preserve them, and the information they contain is well worthy of permanent record.

New York State Railway Association.

(*Continued from page* 653.)

Transit Railway Co., stated that free transfers induced the public to ride and had proved beneficial to his company. Mr. Rossiter, President of the Brooklyn Heights Railroad Co., stated that his road carried 2,600,000 passengers on free transfers last month (August) and its earnings had increased about $40,000, while the other roads in Brooklyn which published their monthly reports showed a decrease. Mr. Rossiter also stated that they gave a transfer to a passenger who was riding on a transfer and the results of reports showed that it is the most advantageous method. Mr. Deming, of the Buffalo Railway Co., stated that on their lines it is possible to ride all day on a transfer, but methods are being adopted to limit their use. Mr. H. A. Robinson, Vice-President of the Metropolitan Street Railway Co., of New York, spoke of the abuse of transfers and the best methods to prevent the public from taking wrongful advantage of the system.

It was stated that in Syracuse about 25 per cent. of the passengers are carried on transfers, in Buffalo from 30 to 35 per cent., in Binghamton from 22 to 25, in Rochester from 35 to 40, and on the Atlantic Avenue system, in Brooklyn, from 16 to 20 per cent.

A paper was read by C. L. Allen, of the Syracuse Rapid Transit Railway Co., on "General Track Construction." The paper dealt with the chemical composition of the rails, and pointed out that many experts believed that the greater life of the rail was obtained when a large percentage of carbon was present in the rail. He stated that in Syracuse the contracts with the rail makers call for rails having .53 to .63 per cent. of carbon, .80 to 1.00 per cent. of manganese, .10 to .12 per cent. of silicon, phosphorus not to exceed .095 per cent. and sulphur not to exceed .07 per cent. The question was discussed further by Mr. Rossiter and by Mr. Evans, of the Nassau Electric Railroad Co., of Brooklyn, the former stating that the rails with a high percentage of carbon had given satisfaction on the Brooklyn Heights Railroad, and the latter stating that the Nassau road still complies with the regular Bessemer rail specification. The West End road, in Boston, uses a little harder rail than any other road in the country.

An interesting paper was then presented by W. W. Cole, Manager of the West Side Railroad Company, of Elmira, on "How Can We Prevent Accidents and Increase the General Efficiency of Employees?" Mr. Cole suggested that the employees be required to sign an application blank on which are printed certain questions referring to the applicant's habits, former positions, etc. He believed that all men should be placed under at least $200 bonds, as it not only has a restraining influence upon the men, but many business men in order to get rid of a man with little trouble will give him a first-class recommendation, but will hesitate to go upon his bond unless they know something of his ability, reputation and personal habits. He further recommended that all motormen should be furnished with a blank report to be filled out each evening or after the run, as to the condition of his car and report all trouble with brakes or any defects with running gears or apparatus, and place the report on file for the foreman of the shop, who should have an immediate inspection made of the cars reported. In the discussion which followed Mr. Robinson stated that the Metropolitan Street Railway Co. had organized a club, the chief object of which was to educate the motormen and conductors and hold meetings to which all other operatives of the company are invited. "I think individual instruction is preferable to that received at lectures, but the lectures are entertaining, and they have been largely attended, and on the whole they are considered very advantageous." Mr. C. D. Hammond, of the Delaware & Hudson Canal Co., was requested by President Rogers to speak upon this question, and in reply said that he was opposed to any set questions being asked employees. "If we promote a fireman to a locomotive engineer he is directed to go to the man who is supposed to know most about his duties as locomotive engineer, and that man takes him in charge and gives him a thorough investigation as to his knowledge of the duties as locomotive engineer, and certifies to his ability before he is promoted." Mr. Fitch, of the Erie road, was not of the same opinion as Mr. Hammond, and stated that they could not get along unless they had a system of examination of the kind referred to by Mr. Cole.

"Power From Trolley Circuit. Is it Practicable?" was discussed by H. S. Newton, Chief Engineer of the Syracuse Rapid Transit Railway Co. The paper dealt principally with the question of the sale of service power outside of the supplying of the currents for manufacturers from the trolley circuit. He stated that in many sections of the country the saving of a ton of coal per day is equivalent to the interest on $20,000, and showed how the revenue of the railroads might be largely increased if proper means were taken to compel the insurance company to modify their rule covering the questions of electric currents in public buildings. The objections as advanced by the Board of Fire Underwriters to the use of the trolley circuit for stationary motors seemed to be embraced in one feature, a ground return, and Mr. Newton spoke of the necessity of placing the matter before the insurance companies so that the present objections to currents of high voltage in a public building may be modified. Mr. Cole stated that for small roads the entire output of their generators run so close to the demand of power that they can never figure on the power they are going to have on the line. The same objection was upheld by the experience of Mr. C. B. Storey, Superintendent of the Hoosac Railway Co., Hoosac Falls.

The paper by Mr. James B. Cahoon, on "The Daily Inspection and Care of Car Equipment," was very practical in its nature and complete in its treatment. He advocated a daily, weekly and monthly system of rigid inspection as the most satisfactory one in successfully operating the cars. "A careful comparison of figures on our road of the different plans of the careful system of inspection and the old way of letting things go until they go to pieces," said Mr. Cahoon, "shows that the saving effect more than equals the total wages of the men employed on inspection and the machinists employed in the day time repairing the cars. This, however, would not hold true on a large road probably, but the saving effect would considerably more than offset the wages of men on inspection alone."

The afternoon session was taken up with the reading of a paper by Mr. F. O. Russeling, General Manager of the Rochester Railway Co., on "The Use of Old Rails as Underground Conductors," and one on "Railway Power Stations," by Mr. Thomas Henning, of Buffalo. Mr. Russeling's paper dealt with experiments on the use of old rails for return circuits in place of copper conductors. In Buffalo, 300 tons of old tram rails were used for this purpose. The best scrap price obtainable for these rails was $8 a ton delivered. As the expert of the road reported satisfactorily as to their conducting power, 1,500 ft. of length was used with four rails in parallel. These were joined so as to make a continuous

conductor and a trench was dug between the curb and sidewalk, in which was placed a continuous trough of rough lumber. When the second set of rails was lowered into place the trough was filled with a hot insulating compound and the cover nailed down. This four-rail conduit was connected up and carried at a heavy load 1,100 amperes for 1,500 ft., with a loss of but four volts. Mr. Russeling stated that it would require 3.55 sq. in. of copper 1,500 ft. long and at a weight of 20,532 lbs. to give the same results as the old rails gave. The total cost of the rails and bonds for the conduits was about $3,322 and for an equivalent amount of copper would have been $12,850. After a year's service they are still maintaining their conductivity. This is more than can be said of any copper bond ever used.

Mr. W. J. Clark, of the General Electric Co., then spoke on the subject of standardization of electric railroad apparatus. He stated that the time had gone by when the representatives of an electrical manufacturing company should attempt to act as instructor to the street railroad men and that the manufacturer will gladly conform to the action of a street railroad company. "I most emphatically place myself on record," said Mr. Clark, "as being in favor of some system to be evolved through the wisdom of the street railroad fraternity and based upon such methods as may seem most just to them, which will fix definitely what a motor of say 25 H. P. or 800 lbs. tractive effort is, or what distance constitutes a 500 kw. generator, and of even going farther than this and define the capacity of switches, circuit breakers and kindred devices. It makes but little difference what the basis of rating is provided it is universal, well understood and thoroughly insisted upon by street railroad men. No one can suffer from such an arrangement, which is entirely just to both manufacturer and user." What he said in regard to the generator rating, he applied with equal or greater force to the rating of street-car motors.

In concluding, Mr. Clark spoke of the importance of protecting electrical machinery against lightning. No detail of electric railroad equipment costs so little upon which so much is dependent as upon its lightning arrestors. The defects in this particular may cause many thousands of dollars damage within an instant.

The following officers were elected for the ensuing year: President, G. Tracy Rogers, Binghamton; First Vice-President, W. Caryl Ely, Niagara Falls; Second Vice-President, John M. Beckkey, Rochester; Executive Committee, H. H. Vreeland, New York; John W. McNamara, Albany; Henry M. Watson, Buffalo, and C. L. Rossiter, of Brooklyn; Secretary and Treasurer, H. A. Robinson, New York. It was decided to hold the next meeting at Niagara Falls, Sept. 14 and 15, 1897.

In the evening there was a banquet, which was largely attended.

Attitude of the Southern Railway Toward its Competitors and the Public.

Mr. Samuel Spencer, President of the Southern Railway Company, has written an open letter to the Railroad Commissioners of Georgia, replying to some statements made by Vice-President St. John, of the Seaboard Air Line. Mr. Spencer denies numerous statements concerning the alleged ownership by the Southern of controlling interests in the Central of Georgia and various other roads, and asserts that competition between his company and the Central, and other companies in which some interest is held, is as active as ever. Replying to the statement that the Seaboard's fixed charges are much less per mile than those of the Southern, he shows that in the last report his gross earnings per mile are one-third larger, the net more than twice as large and the net surplus of the Southern $217 per mile, where as the Seaboard report the same year showed a net deficit of $163 per mile. Only three per cent. of the Southern lines failed to earn operating expenses (and these were branches), while 29 per cent. of the main line of the Seaboard has never earned operating expenses. Mr. Spencer says that the boycott referred to by Mr. St. John, was due chiefly to secret manipulation by the Seaboard Air Line of through rates from the West by means of billing to fictituous destinations. Referring to other accusations, Mr. Spencer says:

The effort of the Southern Railway has been, not to control rates, but to keep them uniform and reasonable and public, and the testimony of substantially every member of the Southern States Freight Association would be to this effect if such testimony should be asked for by your Commission. It has sought stability and the stoppage of secret "cutting," and other illegitimate methods in operation. Its policy has been and is to build up, not to pull down or destroy. It has improved every piece of property which it controls within the State of Georgia or elsewhere, and has furnished improved facilities and accommodations for the public without any increased charge.

Mr. St. John complains that the Macon & Northern and the Georgia Southern & Florida are not made parts of through lines with his.

The Macon & Northern was for months after the insolvency of the Central and the Richmond & Danville in the control of its bondholders entirely free and independent of either corporation The controlling bondholder during this period was the especial friend and financial supporter of the Seaboard Air Line, the banker who floated the bonds to build the Georgia, Carolina & Northern. The managers of the Seaboard Air Line will not deny that the property was offered to them in preference to the Central. For reasans best known to them, they did not secure it, although it was a legitimate extension of their line to Macon.

Until about a year ago the Southern Railway Company owned no interest whatever in the Georgia Southern & Florida. That property was in the hands of a receiver, its reorganizatian was being conducted by a committee, one member of which was a director in the Seaboard Air Line, and another the President of the trust company which is the chief supporter and ally of the Seaboard Air Line in Baltimore. The Seaboard Air Line then had ample opportunity to make the investment in the Georgia Southern & Florida which was afterwards made by the Southern. This would have given the Seaboard a line to Florida.

The managers of the Seaboard Air Line will not deny that the Atlanta & Florida was offered to them. This would have been another legitimate extension of their line.

Up to a few months ago the Georgia Midland was in the market for any purchaser. The Seaboard Air Line had ample opportunity to acquire it, and thus extend its system to Columbus.

The Southern Railway Company has made its investments in these properties openly and in good faith, has materially improved and is still improving all of them which it controls, with much benefit to the public and so far without compensation to itself.

If the Seaboard Air Line does not or cannot avail of its opportunities to enlarge its facilities and increase its business, it should not make public wails because others are more fortunate or more progressive.

TECHNICAL.

Manufacturing and Business.

Mr. M. E. Ingalls, President of the "Big Four" road, is having his private car curtained with pantasoli. The material for these curtains has been specially made with a firm silk tapestry backing. Some of the curtains are over 51 inches wide. The Forsyth fixture is to be used.

Operations were resumed at the National Switch and Signal Works, Easton, Pa., last week after a week's shut-down.

The Rand Drill Co. has recently received an order from the Michigan Central for three air compressors for the shops in Detroit, Mich., Jackson, Mich., and St. Thomas, Canada, and an order for two air compressors from the Missouri Car and Foundry Co., St. Louis.

At the annual meeting of the Westinghouse Air Brake Co., Sept. 1, the old officers were all re-elected. The President stated that the business for the past year had been the most prosperous in the history of the company. The gross business was $5,947,600 and the profit $2,607,936.

The W. De Wees Wood Iron Mills, at McKeesport, Pa., have resumed operations, after a six weeks' shutdown, giving employment to 1,500 men. Four departments of the National Tube Works, at that place have also resumed, with 1,000 employees. The new galvanizing mill will be ready for work by Oct. 1.

The rolling mills of the Hollidaysburg Iron & Nail Co., which have been shut down since June 1, resumed operations on Sept. 14.

Iron and Steel.

The Duquesne Works of the Carnegie Steel Co. resumed work in all departments on Sept. 7, employing nearly 1,000 men. The plant has been shut down for several weeks. No. 2 furnace will be blown in within a few days.

A receiver was applied for on Sept. 4. for the Eureka Cast Steel Co., of Chester, Pa., and the Court appointed Samuel Lees, of Philadelphia. The liabilities, in addition to the mortgages, which amount to $50,000, are given as about $17,000, and assets are estimated at about $12,500.

The Bethlehem Iron Co.'s steel mill closed on Sept. 9, on account of lack of orders. Over 600 men are thrown out of work. The company is also laying off men at the blast furnace, and they will soon be run on half time.

The following officers and directors of the Thomas Iron Co., Allentown, Pa., were elected at the annual meeting of the stockholders, on Sept. 8: President, B. F. Fackenthal, Easton; Secretary and Treasurer, James S. Weaver; Directors, Samuel Thomas and J. W. Fuller, Catasauqua; W. H. Hulick, Charles Stewart, Frederick B. Drake, Easton, and W. P. Hardenburgh, Newark N. J.

A large part of the plant of the Cambria Iron Works, at Johnstown, Pa., has been closed down indefinitely, throwing nearly 2,000 men out of employment, and placing 1,000 more on half time. Four of the six furnaces have been blown out, and six of the seven rolling mills, the steel works, blooming mill and foundry have been closed down. The shut-down is caused by lack of orders.

New Stations and Shops.

Some of the machinery for the new shops of the Northern Pacific at Spokane, Wash., is now being installed, and it is expected to have all the buildings ready for occupancy in October. The cost of the shops, new roundhouse and other improvements is about $200,000. The buildings being erected are: Store house and office, blacksmith shop, machine shop, engine house with stalls for 22 engines, wood-working shop, car shop, ice house, sand and cinder house and coal chute.

An Armor-Piercing Projectile.

A test was made on Sept. 3, at the Indian Head Proving grounds, of the armor plate ordered some months ago for the Russian government, from the Carnegie Steel Co. The plate was Harveyized and re-rolled, and 10 in. thick, being what is known as a reforged plate. The projectile used was a 6-in. capped solid steel shot, made by Isaac N. Johnson & Sons, Spuyten Duyvil, N. Y. The first shot fired had a velocity of 2,100 ft. per second, and penetrated to a depth of 7 in., then breaking in two pieces. A second 6-in. shot of the same character was fired at the 10-in. plate with the velocity of 2,500 ft. per second, when the projectile went through the plate and the backing of two ⅛-in. plates, burying itself in the earth for about 10 ft. It was in first-class condition when recovered.

A New Hamburg-American Steamship Launched.

The Pennsylvania, a new twin-screw steamer for the Hamburg-American Steamship Co., was launched from the Harland & Wolff shipyards, at Belfast, Ire., on Sept. 10. The new vessel is the largest merchant steamer afloat, being 20,000 tons loaded displacement and 13,000 tons carrying capacity. She is 585 ft. long, 62 ft. beam, and 42 ft. deep. She is designed to make an average speed of 14 knots an hour, and has a passenger capacity of 200 first cabin, 150 second cabin, and 1,000 steerage.

A New Torpedo Boat.

Torpedo Boat No. 6, the first of the pair to be built by the Herreshoffs for the United States Government, was launched at Providence, R. I., on Sept. 9. She is the largest and fastest torpedo boat yet built for the United States Navy, and is under contract to make a speed of 27½ knots per hour. The contract price was $144,000.

Three New Battleships.

Bids were opened at the Navy Department, Washington, on Sept. 14, for the three coast-line battleships, for which Congress provided by act of June 10 last. The contracts were awarded as follows: One to the Newport News Shipbuilding & Dry Dock Co. for $2,595,000; one to the Union Iron Works, of San Francisco, for $2,674,950, and one to the William Cramps & Sons Ship & Engine Co., Philadelphia, for $2,650,000. Bids were also received from John H. Dialogue & Sons, Camden, N. J., $2,661,000, and from the Bath Iron Works, Bath, Me., $2,680,000. The new ships, in size and general characteristics will be quite similar to the Indiana.

The general dimensions and statistics of the new vessels are as follows: Length on load water line, 368 ft.; beam, extreme, 72 ft. 2 in.; free board, forward, 19 ft. 6.9 in.; free board, aft, 13 ft. 6 in.; normal displacement, 11,325 tons; mean draft, normal displacement, 23 ft. 6 in.; indicated horse power (estimated), 10,000; speed and knots per hour (estimated), 16 knots, normal coal supply, 800 tons, and total bunker capacity, 1,200 tons. The main battery will consist of four 13-in. and 14 six-in. rapid-fire breech-loading rifles, and the secondary battery of 17 six-pounders and four one-pounder rapid-fire guns, four machine guns and one field gun. The four above-water torpedo tubes will be placed two on each broadside, amidships, and will fire through an arc of 60 deg. The 13-in. guns will be mounted in pairs in two balanced barbette turrets, and will have an arc of fire of 270 deg. each. The turrets and barbettes will be of Harveyized armor 15 in. thick, augmented on the slanting faces by two more inches. On the upper deck amidships, there will be two six-in. rifles on each side, firing through an arc of 130 deg.

Compressed Air in Tunnels.

E. D. Smith & Co., of Philadelphia, are driving a two-mile tunnel for the Metropolitan Water Works of Boston. The tunnel is 11½ × 13½ ft., with four shafts and a portal. No. 1 shaft is 40 ft.; No. 2 shaft is 118 ft.; No. 3 shaft is 111 ft.; No. 4 shaft is 58 ft. deep. They are doing the entire work—drilling, pumping and hoisting—with compressed air. The air is furnished from a plant placed between the portal and shaft No. 4. Air is carried about half the distance through an 8-in. pipe, which is reduced to 6-in., and afterwards to 4-in. The air is furnished by two duplex Corliss engine air compressors, steam and air cylinders 20 in. in diameter by 36-in. stroke, built by the Rand Drill Company, which also furnished 24 Slugger drills for the work. E. D. Smith & Co. are also sinking a wheel pit 280 ft. long, 185 ft. deep, 20 ft. wide for the Niagara Falls Power Co. The drilling, channeling and pumping is done with compressed air furnished by duplex Corliss engine air compressors made by the Rand Drill Co. These are 20-in. in diameter by 30-in. stroke.

Test of a Cycle Inspection Car.

Among the exhibits at Niagara Falls, N. Y., in connection with the convention of the Road-Masters' Association of America, were two inspection cars (a single and a two-seated car) built by the Railway Cycle Manufacturing Co., of Hagerstown, Ind. On Sept. 10, a trial was made of the single car, over the tracks of the Niagara Falls & Lewiston Electric railroad. This road contains 3,400 ft. of four per cent. grade, up which the car was propelled by its one rider, without a stop. This car was described in the *Railroad Gazette* of March, 1895, but has since then undergone several improvements. The two-seated car was illustrated in the issue of Sept. 4, 1896. The car is a four-wheeled vehicle, built of tubing, similar to that of a bicycle; the single weighs 50 lbs., and the two-seated car 68 lbs.

Continued Decline in Pig-Iron Production.

The pig-iron production of the United States suffered a very sharp decline during August and the output is still decreasing. The *Railroad Gazette* for Aug. 21 contained a table giving the total number of furnaces in blast at the beginning of each month from January to August inclusive for both 1896 and 1895. These tables were condensed from others in the *Iron Age*, which has again recently given tables, showing the still further decrease in production. On Sept. 1 the total number of furnaces in blast was 145, with a capacity of 130,500 gross tons per week; this is against 173 furnaces, with a weekly capacity of 157,078 gross tons, on Aug. 1. On Sept. 1, 1895, there were 215 furnaces in blast, with a weekly capacity of 194,029 gross tons. As to the location of the coke and anthracite furnaces in blast on Sept. 1, 1895, 63 are in Pennsylvania, 12 in Ohio, 33 in the South-

and the remainder distributed throughout the country. The total number of coke and anthracite furnaces in blast at that date was 124.

New Work by the West End Street Railway Co., of Boston.

We give below a report obtained directly from the General Manager of the West End Street Railway Company, which includes most of the work which has been done by the company for the past year in the way of improvements and extensions and also the work now in progress.

The Dorchester power-house was started April 20, 1896, and is more than half completed. It is 125 ft. long and 117 ft. wide and is divided into two independent rooms, the engine room being 63 ft. wide and the boiler room 49 ft. wide. It will be equipped with two Rice & Seargeant 1,500-H. P. engines, two Conover pumps and two G. E. 1,300 K. W. generators. The building is made so as to accommodate an equipment twice that of the present installation. The building of the power-house has been under the direction of Whiddin & Co., of Boston. New car-houses have been erected at Arlington Heights; Oak Square, Brighton; Clarendon Hills; Armory street, Roxbury, and at Ashmont street, Dorchester. A storage car-house at Allston is now under construction.

Two 2,000-H. P. Allis-Corliss engines connected directly to the G. E. 1,500 K. W. generators are being placed in the central power station, and six 1,000-H. P. Allis-Corliss engines are being changed from belt to direct-connected with G. E. 1,300 K. W. generators.

Tracks are being extended from Oak Square, Brighton to New Brighton; Brighton and Commonwealth avenues route to Newton; from Reservoir Terminus to Newton line on Commonwealth avenue to a connection with the Commonwealth Avenue Street Railroad; Columbus avenue from Lenox street to Roxbury now under construction and Medford street, Somerville, from Cross street to Somerville avenue. The Atlantic Avenue & Commercial Street line, the Western Avenue & Market Street line and the Sommerville Avenue, Elm Street & Broadway line are being converted from horse to electric power. Other improvements are being made by the company which will be mentioned among the construction notes of the *Railroad Gazette* as the work progresses.

THE SCRAP HEAP.

Notes.

On the Pittsburgh, Cincinnati, Chicago & St Louis an order has been issued to take off all dummy couplers for brake hose from both passenger and freight cars. Brake hose will be left hanging loose, the damage from dust, in this position, being less than that from kinking when hung up.

Railroad employees at Corning, O., and on trains running to and from that town have secured subscriptions amounting to $1,500 for the erection of a building for the Young Men's Christian Association, on railroad premises, and the Toledo & Ohio Central Railroad is to give the ground and $3,000 in money.

The abolition of a number of important grade crossings in East Boston, Mass., which has been agitated for several years, has lately been the subject of conferences between the Citizens' Trade Association and the officers of the Boston & Maine Railroad, and it is said that an agreement to carry out the improvements, under the general state law, has practically been arrived at, although the details have not yet been settled.

A Proposed Canal from the Baltic to the Black Sea.

The results, hardly brilliant, of the North Sea Canal and of the Manchester Ship Canal, the discouraging conclusions of the Commission established to study the French "Two Seas" Canal do not seem to discourage the promoters of maritime canals. After Brussels as a seaport came Rome as a seaport, then Budapest, and now they are talking again of a project still greater, namely, the reunion of the Baltic and the Black Sea by a canal big enough to permit the passage of the largest Russian war vessels and the biggest ocean-going steamers. The project has been talked about before, but now it is brought forward under auspices which make it seem rather more important than heretofore. It appears that the canal will extend from Riga to Kherson, about a thousand miles, taking in its course the Duna, the Beresina and Dneiper and two or three other streams. The general cross-section is to be 65 meters broad at the surface, 35 meters on the bottom, with a mean depth of 8½ meters. The country that will be crossed in Eastern Russia is so flat that locks will not be necessary. It is estimated that the canal works could all be accomplished in five years at a cost of about 600,000,000 francs. The promoters ask a government concession for 66 years, with a guarantee of four per cent. on the capital and one per cent. more for a sinking fund.—*Journal des Transports.*

Municipal Control of Street Railroads in Glasgow.

A little over two years ago, Glasgow, Scotland, took possession of all the transit lines within its limits, and the details of operating them according to the lastest published reports, are as follows:

	1894-95.	1895-96.
Miles in operation	31	32
Cars	305	337
Car mileage	5,169,109	6,831,379
Passengers carried	56,907,519	85,951,230
Receipts	$1,109,400	$1,633,755
Average per car mile	20½c.	23c.
Operating expenses	$1,011,045	$1,255,550
Average per car mile	18½c.	17c.

The Glasgow fares are arranged on a different scale from those in American cities. Instead of charging one fare for a single ride, long or short, the fares are divided into stages according to the distance, and vary from one cent to three cents. The average fare is only nine-tenths of a penny, as compared with 2.4 penny in Manchester, 1.9 in Liverpool, and 1.34 in Birmingham. The system of half-penny fares adopted in Glasgow has greatly popularized the service. The employees work 10 hours a day for six days a week. The net profit to the municipal exchequer was nearly $45,000, but in addition to this all interest and sinking fund charges were met, and a sum of $160,000 set aside for permanent way renewal. The tramways department employs a staff of 2,300 people; it has 4,100 horses, 337 cars, and its annual wages bill amounts to £110,000. Successful experiments have been made with compressed air motors, but horses are still used on all lines.

Geological Congress at St. Petersburg.

The seventh triennial meeting of the International Geological Congress will take place at St. Petersburg in August, 1897. The programme will afford the members of the Congress an opportunity to study the geological and topographical features of Russia in Europe. The meeting will extend over eight days and will be devoted mainly to discussions of the general principles of geology and the present state of the science, in the effort to bring about harmony among the geologists of the world. The principal tour, proposed to take place before the meeting, is from Moscow to the Ural Mountains, and beyond, visiting several famous mineral and mining localities. Another excursion, to occupy a month, is proposed to take place immediately after the close of the Congress in St. Petersburg. After visiting Moscow and vicinity, in a body, the party will separate into three divisions, meeting again at the baths of Vladikavkaz. Thence the entire party will go over the Georgian military road to Tiflis, stopping on the way to visit some of the glaciers of the Caucasus Mountains. From Tiflis, a visit will be made to Baku, the headquarters of the petroleum fields of the Caspian Sea, and afterward to Batoum, on the Black Sea. From Batoum the route will be by way of Kertch to Sebastopol, where the congress will finally dissolve. The Russian Emperor has offered to all of the visiting geologists free transportation, first-class, over the Russian railroads, both before and after the sessions, including the excursions. The president of the congress is A. Karpinsky, director of the Geological Survey of the Russian Empire, and the Secretary is Th. Tschernyschew, St. Petersburg.

Barge George H. Corliss Launched.

The first of the Bessemer fleet to be built on the Calumet River, was launched Aug. 29 at the yards of the Chicago Shipbuilding Co., South Chicago. The George H. Corliss is a large steel tow barge, built for John R. Rockefeller's Bessemer Steamship Company, and is one of the largest vessels of its class on the Lakes.

South American Notes.

The Buenos Ayres tramways last year transported 84,991,868 passengers, and paid in taxes to the municipality the sum of $470,626.

The Sorocabana & Ituana Railroad in Sao Paulo, Brazil, has completed its surveys for a prolongation of its line to Santos. The estimates are, for a single track line $2,600,000, and for a double track, $6,300,000.

The Department of Antioquia in Colombia has recently issued a pamphlet relating to the Antioquia Railroad which has been so much in evidence for several years, owing to the dispute between Messrs. Punchard, McTaggait, Lowther & Co., and the Colombian Government. The desirability of a speedy construction of this road, which no one doubts, is clearly brought out in the documents now published. The proposition that the government should aid the building of this line by the Department of Antioquia seems to be gaining favor. It is contended that whereas the contract with Punchard & Co. called for the payment of some $8,000,000, recent estimates show that it should not cost quite half that sum. The present uncompleted portion of the railroad has been entirely renovated by the departmental government, so that efficient service is again offered, and gross traffic receipts now amount to about $11,500 a month.

According to *El Economista*, of Lima, Peru, the firm of Ballivian & Co. has completed two-thirds of the road around the rapids of the River Madeira between Brazil and Bolivia, and will open the route to traffic Jan. 1, 1897. This is only a cart road with a total length of 112 miles, but it is of great importance. The disastrous attempt of Colonel Church to build a railroad around these rapids from San Antonio on the Madeira to navigable water on the Rio Mamoré in Bolivia is well known. But the natural trade route into the rich regions of Eastern Bolivia lies that way, and the desire to open it up is irrepressible. It is stated that Ballivian & Co. are backed by the New York house of R. F. Sears & Co., whose intention is to stimulate trade by this cart road with a view to the construction later on of a railroad, with further extensions toward Cuyabá in the Brazilian State of Matto Grosso, thus drawing the trade of that region also, which now goes down the River Paraguay to La Plata ports, in the other direction via the Amazon and Pará to United States and European markets.

Faith in the Voters of the Republic.

Mr. Royal C. Vilas, sole dealer in the National electric head lights for locomotives, Monadnock Block, Chicago, has found that many railroad managers do not feel justified in making purchases at this time, giving as a reason that if Bryan is elected President they probably will not need any headlights at all. Mr. Vilas makes the following proposition to all railroad companies: Orders for the electric headlights will be received by him upon the condition that if Bryan is elected, all equipments shipped up to the 3d day of November will be presented to the railroad companies. If Bryan is not elected President, equipments are to be paid for.

Eliminating a Grade Crossing at Long Branch.

It is proposed to change the grade of Long Branch avenue, Long Branch, N. J., where it is crossed by the New Jersey Southern (Central of New Jersey) tracks, so as to provide an undergrade crossing for the Atlantic Coast Electric Railroad (trolley), which runs along that avenue. The avenue will be depressed about seven feet and the railroad tracks elevated about six feet above their present level, so as to give a clearance of 13 ft. in the avenue. At present there is a grade crossing at this point. The change will be made before next winter and will cost about $25,000.

Brussels International Exposition.

A national undertaking will be made of the exposition to be held at Brussels in 1897, although at first it was projected as a private enterprise. A commission under Sir Albert K. Rollit will have charge of the British interests. American manufacturers who wish to be represented should write to the officers in charge of the exposition.

The Liverpool Overhead Railways.

This company is making steady progress. In the past half year it carried 3,739,575 passengers, of whom 2,284,823 were second class, against 3,460,060 in the first half of last year. The dividend rate has steadily risen from one per cent. for the second half of 1893 and first half of 1894, to two for the second half of 1894, and 2¼ per cent.; 3½ and 2¾ for the past three half years. The Southern extension will, it is hoped, be opened in the late autumn. The total passenger receipts are returned at £30,604, giving an average fare of slightly under twopence for each passenger.—*Railway News* (London).

The Railroad to the Caucasus.

News comes from Tiflis to the effect that the Russian Government have finally resolved to build a railroad across the main chain of the Caucasus from Vladikavkaz to Cutais on the Trans-Caucasian line. Should the report be true, it means that the engineers, who last autumn surveyed all possible routes, have decided in favor of carrying it over the Mamisson Pass, which attains an altitude of nearly 9,500 ft., and rejected the alternative proposal of tunneling the mountain at the head of the famous Dariel Gorge. To tunnel the Cross Mountain on the more eastern route would entail an enormous present expenditure; on the other hand, to keep the Mamisson route free of snow for six months of the year will be a most difficult and costly undertaking. —*Transport.*

The Bicycle on English Railroads.

It is well that bicyclists should be under no misapprehension as to the privileges to which they are entitled when traveling by rail with their machines. The ruling of Judge Vernon Lushington, Q. C., settles a moot point. The Great Western sued a certain Mr. George Selwin Edwards, for 14s. 10d. railway fare, and Mr. Edwards claimed £5 damages for the alleged detention of a bicycle. The facts are these: One day Mr. Edwards reached Paddington two minutes before the train for Newbury was due to start, and he had with him a bicycle, which the company's servants declined to put into the train, as Mr. Edwards had not taken a ticket for the machine or had it labeled. He traveled home without it, and as it did not come to hand the next morning he went to Paddington and back in search of it without a ticket, but later in the day the machine turned up. The judge decided that Mr. Edwards had no right to travel on the company's line without a ticket, and he, therefore, gave judgment for the company. As far as the counter-claim was concerned, the judge held that a bicycle could not be treated as passengers' luggage. The company had a right to send it as goods within a reasonable time. He gave judgment for the company in this case too, and ordered Mr. Edwards to pay the costs.—*Transport.*

Foreign Notes.

The lighterage business of the port of Liverpool, which includes the whole estuary of the Mersey and the half dozen other ports on its shores, has been consolidated, 13 firms, owning 200 flats and barges, having been amalgamated into one company.

The English firm which has got an order for 10,000 tons of steel rails for China is Back & Manson, and the rails are being made at the Barrow Steel & Iron Works. The bid was 409,913 taels, which was 77,723 taels under the bid of Messrs. Krupp, of Germany. (A tael is about 70 cents.)

Messrs. Pearson & Son, of England, have made a contract with the Mexican Government to deepen the harbors at Coatzacoalcos, the Gulf, and at Salina Cruz, the Pacific terminus of the Tehauntepec Railroad, and it is stated by *Herapath's Journal*, from which we take this item, that the railroad in question is expected to become an important thoroughfare for freight and passengers as soon as this is completed. The Japanese government is reported to have subsidized a line of steamers to run from Osaka to Salina Cruz, with the object of carrying cotton, coming from the Atlantic states of this country, to "the numerous cotton factories" which have been started in Japan.

Poetry and Prose.

Charles H. Hoyt, the theatrical manager, once journeyed to San Francisco with one of his own companies. Most of his companions got out very early one morning to have a look at the Rocky Mountain scenery. Hoyt remained in his stateroom. One of the young women in her enthusiasm ran excitedly to his door and thumped on it with vigor.

"What's the row?" came from within.

"Come out, Mr. Hoyt; come and see the perfectly lovely scenery."

"I don't want to see it," replied Mr. Hoyt; "I'm paying excess baggage now on a good deal of it. That's enough for me."—*Cleveland Plain-Dealer.*

State Loans in Default.

The principal loans in default in 1895-6 are summarized as follows:

States.	Approximate principal outstanding.	Approximate interest arrears.
Argentine Provincial Loans	£20,300,912	£5,681,757
" Municipal Loans	2,451,840	742,752
" Provincial Cedulas	13,697,364	2,330,000
Colombia	1,913,500	1,522,428
Costa Rica	2,000,000	200,000
Former Confederate States	2,418,800	5,248,796
Ecuador	693,160	....
Honduras	5,398,570	11,046,229
Liberia	100,000	154,000
Louisiana (Certificates)	184,432	....
Mississippi	1,400,000	4,107,000
West Virginia	3,047 874	....
Total	£53,506,452	£30,932,962

In this table the States of Guatemala, Nicaragua and Paraguay, which appeared as defaulters last year, are not included, though the arrangement with the first-named has not yet been ratified. Ecuador appears this time after being omitted last year, having repudiated in a particularly shameless fashion the inadequate settlement previously made with the bondholders. The list, as it stands, seems incomplete, since those states which, while not in total default, are evading the larger portion of their obligations, should be bracketed with those given above. Portugal, for instance, is paying only about one-third of the interest on her debt, while Greece has arbitrarily deprived her creditors of seven-tenths of the amount to which they are entitled.—*The Economist (London).*

Perhaps this table will be of interest to those who wish us to try the silver experiment. Argentina is suffering from years of financial experiment, and the present currency is depreciated paper. Colombia has the single silver standard; actual currency, paper. Costa Rica is nominally a silver state, as is Honduras. Actually their currency is largely depreciated and fluctuating paper. Ecuador has the single silver standard.

The Queen's Saloons.

The saloons in which Her Majesty has hitherto traveled between Scotland, Windsor and the Isle of Wight are, though very luxuriously furnished, two comparatively short and light vehicles connected by a gangway. The London & North Western Railway Co. would like to

build new saloons, but Her Majesty prefers the ones to which she has become accustomed.

The royal train is always a heavy one, and the other vehicles composing it are of modern proportions, and as the royal saloons are always in the middle of the train, and as trains made up with light vehicles between long and heavy ones have been pronounced by the Board of Trade inspectors to be dangerous and liable to derailment, something had to be done; so the two old bogies have been mounted on one 60-ft. underframe and at the same time the electric light has been fitted. It is to be hoped that this latter innovation will meet with more success than did gas, which was once laid on to the royal saloons, but Her Majesty promptly had it removed.—*Railway Engineer* (London).

New York State Canal Improvements.

An estimate of the amount to be spent upon the Middle Division of the New York State canals next winter has been prepared by Engineer Gere of that division. The total amount to be expended will be $1,241,919, of which $206,332 will be used on the Syracuse level, for doubling the size of the two locks, for excavating 210 000 cu. yds. of earth between the locks and for building additional walls. On the Jordan level, $505.700 will be spent to remove 363,000 cu. yds. of earth and 15,000 cu. yds. of rock, and to build 53,000 cu. yds. of tow path. On the Utica level $414,301 will be spent to increase the depth of the canal 2 ft. between lock No. 45 at Frankfort, and lock No. 46 at Utica. In accordance with the bill making the appropriation, the expenditure of a portion of the money is required for deepening the Oswego canal as well as the Erie. The amount to be spent on the dams at Oswego will be applied as follows: Oswego dam, $49,000; Braddock's dam, $13,000; High dam, $20,000; Minetto dam, $15,000, and Phœnix dam, $15,000. The culvert under the canal at Oswego will also be repaired, at an expense of $4,285.

A Steel Signal Post.

Among the exhibits of Track Supplies at the recent convention of the Road Masters' Association of America, at Niagara Falls, was that of the Bond Steel Fence Post Co. These posts are of Bessemer steel and wedge-shaped in section; they are 7 ft. 6 in. long, 8½ in. wide at the bottom, 3½ in. wide at the top, and ⅛ in. thick. In addition to their use as fence posts, the manufacturers claim that they can supply them for whistling and signal posts, at the same prices as the wooden posts now used for those purposes.

Mr. Bryan's Way of Regulating Interstate Commerce.

"The right of the United States Government to regulate interstate commerce cannot," says Mr. Bryan, "be questioned, and the necessity for the vigorous exercise of that right is becoming more and more imperative."

Yes. A little more than two years ago a young man named Debs undertook to question that right. Backed up by an Anarchist-pardoning Governor named Altgeld, he violently and riotously denied that right to the Federal Government and claimed it for himself. When the Government attempted "the vigorous exercise of that right" he raved against "Federal encroachments" and organized something very much like an insurrection. The Federal Government sent some troops to vindicate its "right to regulate interstate commerce," and had an injunction issued against Debs, enjoining him not further to interfere with interstate commerce, and when he defied the injunction locked him up for contempt of court.

And now a Democratic National Convention denounces such use of force by the government as "a crime against free institutions," and especially objects to the issuing of that injunction as "a highly dangerous form of oppression." And William J. Bryan "unqualifiedly indorses" that denunciation and that objection. And yet he says, with his best cocksure grandiloquence: "The right of the United States Government to regulate interstate commerce cannot be questioned, and the necessity for the vigorous exercise of that right is becoming more and more imperative."—*New York Tribune.*

suit Against the Standard Telephone Company.

The Western Electric Company has brought suit against the Standard Telephone Co., in the United States Circuit Court of the Western District of Wisconsin, for the alleged infringement of patents Nos. 27,522, 28,266, 256,258, 299,926, 303,714 and 309,617. These patents cover a telephone connection, switchboard appliances and bell apparatus upon which the Government Bell Telephone Company holds unexpired patents.

Everything Lovely in Texas.

Chairman Reagan, of the Texas Railroad Commission, is quoted in an interview as follows:

"We have now the best set of railroad laws in the world. There is no such thing as a rate war in Texas, because we make all the rates. The roads have fought our action in the the Legislature and in the courts, but we have been sustained to a large extent, and the railroads themselves are coming to believe that while they may have lost in some directions they have gained in others, as a result of the powers which we exercise. There has been, for instance, less competition than there would otherwise have been, and while rates have in some cases been lower than those favored by the roads, they have been stable, and nothing has been frittered away in rate wars. The people are well satisfied, because we have been careful to avoid discrimination for or against localities. Rates are even as far as we have been able to make them."

CAR BUILDING.

The Central Vermont has recently put into service on its through trains, nine new passenger coaches, six of which are fitted with the Gould vestibule platform and couplers, the other three having the standard open platform.

The new cars are all 55 ft. long and 9 ft. 8 in. wide; all are fitted with Westinghouse quick action air-brakes, automatic train signals and steam-heating fixtures. They have four-wheeled trucks with 8-ft. wheel base and 36-in. Krupp steel-tired wheels on hammered scrap axles, with journals 4½ in. × 8 in. The trucks are also fitted with National hollow brakebeams, plated side-sills, double iron bolsters and King's patent side bearings. All longitudinal timbers in the frame are single (no splicing) and of the best quality Southern yellow pine, with cross timbers of white oak; the body framing has "W" style of bracing and tie rods at every post from sill to plate; the carlines are of wrought iron; and the siding of narrow matched boards. The outside color is the standard Tuscan red of the Central Vermont road. On the cars fitted with vestibules, all railings, brake wheels and fittings are of bronze, with ornamental grilles on the ends of the railings. The interior finish of the cars throughout is mahogany. The seats are Hale & Kilburn's No. 86, walkover type, covered with frieze plush in Spanish brown color. There is a saloon at each end of the cars, with water coolers, wash stands and all toilet appurtenances. The ceilings are of decorated oak veneer, the deck sashes are hung on ratchets and filled with amber deck glass, protected outside by wire screens. All trimmings are of bronze, the window-curtains of the Saranac tapestry, fitted with the Acme patent fixtures. The cars are lighted by five Acme twin center lamps.

The company has also put in service three smoking-cars, of the same general description, style of construction and equipment as those already described, except that the finish is quartered oak and the upholstery leather instead of plush. These cars are also vestibuled.

BRIDGE BUILDING.

Baltimore, Md.—The contract for the iron bridge over George's Run, near Shombergers, between the fifth and sixth districts, has been awarded by the County Commissioners to the Wrought Iron Bridge Co., Canton, O., for $1,465. The bridge is to be one span of 74 ft., and have a clear roadway of 16 ft.

Brooklyn, N. Y.—The joint committee of the Queens County Board of Supervisors and the Brooklyn Board of Aldermen has decided to build a bascule bridge over the Newtown Creek at Vernon avenue. A meeting will be held, when the cost of the bridge and the plans will be considered.

Chambersburg, Pa.—The Grand Jury has recommended the building of a county bridge over Rush Creek in Antrim Township.

Chicago, Ill.—The Board of Trustees of the Sanitary District of Chicago opened bids Sept. 2 for the superstructure of the Elgin, Joliet & Eastern's bridge, as follows: Chicago Bridge and Iron Co., $34,200; King Bridge Co., Cleveland, O., $36,800; Lassig Bridge and Iron Works, Chicago, $38,485; Massillon (O.) Bridge Co, $36,000; Milwaukee (Wis.) Bridge and Iron Co., $33,477; New Jersey Steel and Iron Co., Trenton, $37,082; Toledo (O.) Bridge Co., $37,000; Union Bridge Co., Athens, Pa., $36,300; Youngstown (O.) Bridge Co., $34,236.

At the same time, bids were also opened for the metal work of the Western avenue boulevard bridge at the intersection of Southwest avenue and the main channel, as follows: Chicago Bridge and Iron Co., $19,600; King Bridge Co., $18,300; Lassig Bridge and Iron Works, $16,585; Massillon Bridge Co., $16,000; Milwaukee Bridge and Iron Works, $15,209; New Jersey Steel and Iron Co., $17,553; Toledo Bridge Co., $17,000; Union Bridge Co., $17,951; Youngstown Bridge Co., $17,114; Albert H. Wolf, Chicago, $21,475.

Cincinnati, O.—It is stated that the contract for the superstructure of the bridge at Fern street, over the Cincinnati, Lebanon & Northern, has been awarded to L. Schrieber & Son's at $10,993.

Elkton, Md.—The contract for a new bridge over Elk River at this place, has been awarded to the Groton (N. Y.) Bridge Co. for $8,375. The question of adding a drawbridge was considered, but as it would cost $15,000 it was decided not to build one.

Grimsby, Ont.—The contract for an iron bridge over the Forty-Mile Creek has been awarded to the Stratford Bridge Co.

Hagerstown, Md.—The Washington and Allegany County Commissioners have awarded the contract for a steel bridge across Sideling Hill Creek to the Groton Bridge and Mfg. Co., Groton, N. Y., at $1,565. The bridge will be 90 ft. long and have a 12 ft. roadway. The cost will be borne equally between the two counties.

Lancaster, Pa.—The County Commissioners have let these bridge contracts: For an iron bridge over the Conestoga, at Hinkletown, to the Penn Bridge Co., Beaver Falls, Pa., at $3,347; for an iron bridge over the Conowingo, in Fulton Township, to the Massillon (O.) Bridge Co., at $540.

Little Rock, Ark.—The Pulaski County Bridge Commissioners have awarded the contract for the free bridge across the Arkansas River, at the foot of Main street, to the Groton (N. Y.) Bridge and Mfg. Co for $353,022, work to begin at once.

New York.—The East River Bridge Commissioners have adopted specifications for the foundations for the towers for both ends of the bridge. The specifications have been published in designated New York and Brooklyn papers, and bound copies will also be sent on application to all intending bidders. The borings which have been made show that from 60 to 70 ft. of foundation is needed on both sides of the river.

Niagara Falls, N. Y.—The Board of Public Works received tenders for the superstructure of an overhead bridge at Pierce avenue as follows, the first figures being for steel and the second for timber joists: Berlin Iron Bridge Co., East Berlin, Conn., $11,984 and $10,950; Havana Bridge Works, Montown Falls, N. Y., four plans, $11,700, $11,100, $10,300, $9,400; Variety Iron Works Co., Cleveland, O., $11,397 only; Buffalo Bridge & Iron Works, $14,974 and $12,280; Penn Bridge Co., Beaver Falls, Pa., $13,295 and $11,494; Wrought Iron Bridge Co., Canton, O., $12,229 and $10,532; Owego Bridge Co., $10,126 and $8,182; Groton Bridge Co., $13,000 and $11,540; King Bridge Co., Cleveland, O., $12,814.84 and $10,895.44. The following bids were received for the foundation work, the bidders all residing here: John Speicher, $3,365.90; Makin & Cookman, $3,982.55; W. A. Shepard, $3,269; R. D. Young, $4,013.79. All the bids were referred to the City Engineer.

Philadelphia, Pa.—It is reported that H. K. Nichols, engineer of the Philadelphia & Reading, is making plans for an iron and stone bridge to be built at the Falls road, Falls of Schuylkill, this place.

Toronto, Ont.—Tenders are being received by the Chairman of the Board of Control for a foot bridge at Riverdale Park, across the River Don.

York, Pa.—The County Commissioners have awarded the contract for a new bridge over Codoru's Creek at West College avenue, in this place, to cost $10,000. It will cross the Northern Central Railroad at grade.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Chicago Junction & Union Stock Yards, quarterly, 1½ per cent. on preferred stock, payable Oct. 1.

Chicago, Milwaukee & St. Paul, yearly, $3.50 per share on preferred stock, and $2 per share on common stock, payable Oct. 21.

New York & Harlem, 2 per cent. on preferred and common stock, payable Oct. 1.

Stockholders' Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Alabama Great Southern, annual, company's office, Birmingham, Ala., Oct. 7.

Ann Arbor, annual, company's office, Durand, Mich., Sept. 19.

Chesapeake & Ohio, annual, Pace Building, Richmond, Va., Oct. 20.

Chicago, Milwaukee & St. Paul, annual, company's office, Milwaukee, Wis., Sept. 19.

Fitchburg, annual, company's office, Boston, Mass., Sept. 30.

Lake Erie & Western, annual, company's office, Peoria, Ill., Oct. 7.

Minneapolis & St. Louis, annual, company's office Minneapolis, Minn., Oct. 6.

New York, Ontario & Western, annual, 56 Beaver street. New York, Sept. 30.

St. Louis Southwestern, annual, company's office, St. Louis, Mo., Oct. 6.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *American Street Railway Association* will hold its annual convention at the Southern Hotel, St. Louis on Oct. 20–23.

The *American Institute of Mining Engineers* will hold its annual meeting in Denver, Col., beginning on Sept. 21. For provisional programme see issue of July 24, page 530.

The *Travelling Passenger Agents' Association* will hold its next annual convention at St. Louis, Mo, beginning Sept. 29.

The *American Railway Association* will hold its next annual convention at the Hoffman House, New York City, Oct. 7.

The *Freight Claim Association* will hold its next annual convention at The Jefferson, Richmond, Va., beginning Oct. 7.

The *Association of Railway Superintendents of Bridges and Buildings* will hold its annual meeting at Chicago on Oct. 20. For programme see issue of Aug. 7, page 560.

American Society of Civil Engineers.

A regular meeting was held at the Society House, New York City, on Sept. 16. A paper by E. Sherman Gould, M. Am. Soc. C. E., entitled "The New Water-Works of Havana, Cuba" (already published), was presented and discussed.

Civil Engineers' Club of Cleveland.

A meeting was held at the rooms of the club, in the Case Library Building, Cleveland, O., on Tuesday evening, Sept. 8. Vice-President Richie presided, there being present 33 members, with their guests. The feature of the meeting was a talk on "Some Examples in Recent Roof Construction," by Mr. James Ritchie. The subject was discussed by Messrs. Porter. Searles, Richardson, Hyde, Brown and others. Messrs. McGeorge and Thomas were elected members of the society.

American Street Railway Association.

The annual convention of the American Street Railway Association will be held at St. Louis Oct. 20 to 23. A special train will leave Boston at 10:30 a. m. and New York at 1.50 p. m. on Sunday, Oct. 18, and will run over the Boston & Albany, New York Central, Lake Shore & Michigan Southern and Big Four railroads to St. Louis. The rate will be one and one-third fare for the round trip. The train is scheduled to arrive at St. Louis at 6:50 Monday evening. The convention headquarters will be at the Southern Hotel, but the meetings will be held in one section of the building which was constructed for the recent Republican convention. A large amount of space for exhibition purposes is still available.

The following papers will be presented to the convention:

Track and Track Joints, Construction, Maintenance and Bonding, by M. K. Bowen, Superintendent, Chicago City Railway Co.; Trucks, by John N. Akarman, Superintendent, Worcester Consolidated Street Railway Co., Worcester, Mass.; How Can the Revenue of Street Railways be Increased, Taking into Consideration the Collection of Fares, Methods of Registry, Transfers, Use of Tickets or Cash Fare and Attractions along the Line of Road, by C. Densmore Wyman, General Manager, Milwaukee Street Railway Co.; Modern Overhead Electric Construction, by B. Willard, General Superintendent, New Orleans City and Lake Railroad Co.; The Modern Power House, by Richard McCulloch, Engineer, Citizens' Railway Co., St. Louis, Mo.; Selection and Management of Employees (to be discussed at an "executive session"), by W. F. Kelly, General Manager, Columbus Street Railway Co, Columbus, O.

Every effort is being made to have this convention the largest and most successful of any yet held by the association. T. C. Pennington, of the Chicago City Railway Co., is Secretary of the association.

PERSONAL.

—Mr. Harvey N. Loomis has been appointed General Manager of the Trojan Car Coupler Co., with office at No. 49 Wall street, New York.

—Mr. John D. Cutter has been appointed Traveling Passenger Agent of the Erie, succeeding Mr. F. A. Beatty. Mr. Cutter's headquarters will be at Youngstown, O.

—Mr. A. A. Heard, recently General Passenger Agent of the Northern Steamship Co., has been appointed Secretary of the Central Passenger Committee, with headquarters in Chicago.

—Mr. James P. Elmer has been appointed agent in the Northwest for the Shickle, Harrison & Howard Iron Company of St. Louis, with headquarters at 114 Endicott Arcade, St. Paul, Minn.

—Mr. George Haskell has been appointed Superintendent of the Lima Northern, in place of C. W. Risley, resigned. Mr. Haskell is a brother of one of the projectors and former executive officer of the road.

—Mr. W. H. Newman, Third Vice-President and General Traffic Manager of the Chicago & North-Western, has resigned, to accept the position of Second Vice-President of the Great Northern, with headquarters at St. Paul, succeeding W. W. Finley, recently elected Second Vice-President of the Southern Railway.

ELECTIONS AND APPOINTMENTS.

Houston, East & West Texas.—M. F. Smith having resigned to accept service elsewhere, D. W. Colley is hereby appointed Commercial Agent with headquarters at Houston, Tex. Mr. Colley has been car accountant for some years and has been succeeded in that office by Mr. P. Briscoe.

Los Angeles Terminal.—Mr. William Wincup having resigned as Acting General Manager and Secretary of this company, the following officers have been elected to fill the vacancies, Mr. S. B. Hynes, General Manager, and Mr. F. K. Rule, Secretary. W. J. Cox has been appointed Assistant to the General Manager. The offices of Superintendent and General Passenger and Freight Agent have been abolished, and the duties assumed by the General Manager.

New York, Susquehanna & Western.—The Directors of the road elected executive officers last week as follows. President, A. Lawrence Hopkins; Vice-President, Roswell Eldridge; Second Vice-President, Treasurer and Secretary, F. P. Moore; Assistant Treasurer, Edward E. Gardiner.

Northern Pacific.—The offices of Assistant General Purchasing Agent and Assistant Superintendent of Telegraph, both situated in Tacoma, were abolished after Sept. 1, when the road passed into the hands of the reorganized company. S. D. Mason has been Assistant General Purchasing Agent and J. Q. Mason, Assistant Superintendent of Telegraph. The duties of the former office will be performed by W. G. Pearce, Assistant General Superintendent.

Oregon Improvement Co.—At the annual meeting of the company, held at Portland, Or., Sept. 10, the following directors were elected: Henry Failing, C. H. Lewis, C. A. Dolph, William M. Ladd, Jonathan Bourne, Jr., all of Portland; and Elijah Smith, Edwin S. Hooley, W. J. Hoffman, Charles McQuaide, J. S. Bache and James B. O'Neil, all of New York. Executive Committee—President, Elijah Smith; Vice-President, C. A. Dolph; Treasurer, Prosper A. Smith; Secretary, W. C. N. Pesten.

Paragould Southwestern.—At a meeting of the directors, at Paragould, Ark., on Sept. 8, the following officers were elected: W. C. Hasty, President; A. Bertig, Vice-President; J. F. Cardwell, Treasurer; Frank S. Yantis, Auditor, and F. S. Rawlins, Director, succeeding O. McGowor, deceased.

St. Louis & San Francisco.—Mr. W. T. Smetten has been appointed General Road-master, in charge of all track matters, with headquarters at Springfield, Mo.

Mr. G. W. Turner has been appointed Bridgemaster of the entire system, with office at Springfield. He will have charge of all buildings, bridges and water service.

A general agency for the freight and passenger departments will be established in Kansas City with James Donahue as General Agent. Mr. Donahue was recently General Freight and Passenger Agent for the Kansas City, Pittsburgh & Gulf.

San Antonio & Aransas Pass.—The annual meeting of the stockholders was held at San Antonio, Sept. 2. The following were elected as Directors: M. D. Monserrat, T. E. Stillman, T. H. Davis, William Mahl, R. H. Innes, S. W. Terry, William Berry, T. B. Talfrey and R. Reagan Houston. President, T. E. Stillman, New York; Vice-President, M. D. Monserrat, San Antonio; Treasurer, W. H. Field, San Antonio.

Southern.—Mr. W. L. Tracy, heretofore Master Mechanic at Birmingham, has been appointed Master Mechanic of the Seventh Motive Power Division, with headquarters at Atlanta, vice Mr. W. H. Hudson, transferred.

Toledo, Peoria & Western.—W. W. Baldwin, of Burlington, Ia., and J. W. Davidson, of Pittsburgh, were re-elected Directors of the railroad at the annual meeting held at Peoria, Ill., Sept. 9.

Toledo, St. Louis & Kansas City.—At the annual meeting of the stockholders, in Toledo, on Sept. 10, the following directors were elected: Franklin J. Sawyer, Buffalo, N. Y.; Clarence Brown, Toledo, O.; Martin L. Crowell, Toledo, O.; James L. Laidlaw, New York, James P. Kneeland, New York. There was no change in the officers.

Western of Alabama.—The stockholders held their annual meeting at Montgomery, Ala., Sept. 1. The officers were re-elected as follows: George C. Smith, President and General Manager; H. M. Abbett, Secretary and Treasurer. Atlanta; T. J. Hunter, Auditor, Atlanta; John A. Gee, General Passenger Agent, Atlanta; R. E. Lutz, Freight Traffic Manager, Montgomery; Robert T. Pace, General Purchasing Agent, Atlanta.

RAILROAD CONSTRUCTION

Incorporations, Surveys, Etc.

Ashboro & Montgomery.—Grading on this road, which is to extend from Starr to Ashboro, N. C., 26 miles, was completed on Sept. 9. The new road is now in operation for about six miles of its length. It is an extension of the Aberdeen & West End, to connect the latter with the Ashboro branch of the Southern.

Astoria & Goble.—Work on this line, to connect Rainier, Ore., with Astoria is being pushed rapidly, there being 600 men and 175 teams employed. Right of way has been maintained for nearly the whole length of the line, 46 miles, and grading has been finished in Rainier.

Baltimore & Ohio.—A plan is on foot to change the line of the road in Pittsburgh. The line at present extends along Second avenue in entering the city. A new double-track road will be built, running along the Monongahela River, and extending from Laughlin Junction, just outside of Pittsburgh, to Second avenue and Desputia street, Glenwood. It will involve over 3,000 ft. of trestling, contract for which has been awarded to McCabe & Bro., of Baltimore. There will be over 30,000 ft. of piling and from 1,000 to 1,500 cu. yds. of masonry. By changing its line the road opens up a large tract of land which it controls, and which may be improved by the building of large freight yards. It is estimated that the work will cost from $250,000 to $300,000.

Butters Lumber & Railway Co.—This company has begun the grading of a road from Hub to Fair Bluff, N. C., in Columbus County, N. C., in the eastern North Carolina pine forests. The road will be a common carrier. Connection will be made at Fair Bluff with steamboats to be run to Georgetown, S. C. The company has purchased a large tract of timber-land and will build several large steam saw-mills. Several locomotives and flat-cars will be purchased this fall.

Columbia & Red Mountain.—This road, being built as an extension of the Spokane Falls & Northern, will be 15 miles long, north from Northport, Wash., on the Spokane Falls & Northern, to Rossland, B. C. The name of the corporation from Northport to the International boundary line is as above; length of the line, seven miles. From the boundary line to Rossland, B. C., the name of the corporation is Red Mountain Ry. Co.; length of the line, eight miles. The total difference in altitude between Northport and Rossland is 2,300 ft. The character of the country is mountainous, which necessitates heavy grades and heavy curvature. The bridging on the line is very light with the exception of the crossing of the Columbia River. It will require a bridge 1,200 ft. in length to be constructed the coming winter. Transfer across the river in the meantime will be by ferry. Grading is practically all done and track laying will begin in 10 days. Work is expected to be completed and the line open for traffic by Nov. 1. E. J. Roberts is Chief Engineer.

Concord Southern.—A meeting of the stockholders will be held on Sept. 29, at Concord, N. C., to elect officers and to complete the organization. The company will build a road from Concord to Aberdeen, N. C., connecting with the Aberdeen & West End, and, through the latter road, with the Seaboard Air Line. This would form a competitive line to the Southern from Concord, a large cotton manufacturing town. Several Northern capitalists are interested in the enterprise.

Denver, South Park & Hill Top.—Articles of incorporation of the company were to-day filed with the Secretary of State at Denver, Col. The capital stock is $100,000, and the incorporators are Thomas F. Dunaway, Frank Trumbull, B. H. DuBois, S. L. Rainey and Felix Leavick. The road will eventually be a part of the "South Park" line, the Denver, Leadville & Gunnison, and extends from Fairplay seven miles west to Hill Top, where it taps a number of shipping mines. The incorporators are officers of the Union Pacific, Denver & Gulf which operates the Denver, Leadville & Gunnison.

Grand Trunk.—The company is laying new rails, 96 lbs. to the yard, on the line between Cornwall and Montreal, replacing the old rails which weighed 76 lbs. to the yard.

Manitoba & Lake Dauphin.—Mr. William Mackenzie, one of the contractors of this new road, states that the work is progressing rapidly at present, although delayed somewhat by wet weather at the beginning of the season. Of the 120 miles, the rails are laid on about 20 miles, and track laying is being pushed forward at the rate of two miles a day.

New York, New Haven & Hartford.—Work is being pushed rapidly on the cutting away of a large bank which now necessitates a sharp curve in the main line of the road, near the Roger Williams Park station, R. I. It is the intention to straighten the line when the bank has been removed. The earth taken out is being used as filling for the new station at Providence.

Norfolk, Willoughby Spit & Old Point.—This new road, between Norfolk, Va., and Willoughby Spit, is now ready for operation between these points. The ferry from Willoughby Spit to Old Point, on the coast, a ride of only 10 or 15 minutes, is to be running by Oct. 1.

Queen Anne's.—President Bosley denies a current report that the line would not be built beyond Greenwood, Del., where it connects with the Philadelphia, Wilmington & Baltimore. The original plan to build the road to Lewis, Del., on the Atlantic Coast, will be carried out. The line is nearly finished to Greenwood, 36 miles from Queenstown, the western terminus. It is expected to begin to run trains when the road is completed to Greenwood. Negotiations have been in progress with the Pennsylvania for rights of way across its tracks at Greenwood and Ellendale, Del. These crossings have been in dispute and condemnation proceedings have been resorted to.

St. Joseph Valley.—Work on the extension of this road, from Benton Harbor, Mich., to Berrien Springs, was begun at Benton Harbor, on Sept. 7. The road will connect at South Bend with the Indiana, Illinois & Iowa.

San Francisco & San Joaquin Valley.—It has been announced that no more trains will be run over this road south of the San Joaquin River, until the right of way has been obtained into Fresno, Cal., and trains can enter that city. Patterson, 12 miles north of Fresno, is to be the terminus until that time. Recently the temporary teminus has been just north of the town limits of Fresno.

Sierra Pacific.—A company has been incorporated at Stockton, Cal., to build this road, which will connect Stockton with Jackson, Amador County, 50 miles. The road will be narrow gage. In addition to the main line there will be branches with termini at San Andreas, Camp Seco and Plymouth Rock mine, all in Calaveras County. The capital stock is placed at $10,000,000. Directors of the company have been elected as follows: B. F. Langford, B. W. Moore, George A. Brown, Jr., D. A. Robertson, P. A. Buell and M. J. Gardner, of San Joaquin County, and W. A. Shippee, of Avon, Butte County. B. F. Langford has been elected President; P. A. Buell Vice-President and Treasurer, and B. W. Morse Secretary. It is said that T. A. Bullock, of New York, is the principal promoter of the scheme.

Union Pacific.—Extensive improvements are being made on the main line in the Wyoming Division. Between Walcott and Fort Steele four wooden bridges are being replaced by metal structures and curves reduced. Between Grenville and Rawlins, seven miles, the 60-lb. rails are being taken up and replaced by 70-lb. rails.

Utah & California.—This road, proposed as a line to connect Milford, Utah, with Los Angeles, Cal., has obtained possession of 145 miles of grading done by the Union Pacific, south from Milford, some years ago. Several routes have been proposed for the connection with Southern California, but none has as yet been fixed upon. From Milford trains will be run into Salt Lake City on the tracks of the Oregon Short Line & Utah Northern.

Ward Lumber Co.—This company is building a line from Campbell, Mo., to Poplar Bluff, a distance of 30 miles. The road will be a connection between the St. Louis Southwestern and the Iron Mountain & Southern. It is standard gage, and will be used for freight and passenger traffic. It is expected that about 10 miles of the line will be completed this year. C. A. Ward, at Whiting, Ia., is President of the company.

West Shore (Cal.)—A company has been incorporated at San Francisco to build this road from that place to Santa Cruz, a distance of 80 miles. A map and profile of the proposed route has been filed at Redwood City. The route extends from San Francisco, south through San Mateo County to the Santa Cruz boundary line, passing through San Pedro Valley, Halfmoon, Bay Colony, Spanishtown, Purissima, Lobitus Station, San Gregoria, Pescadero, Pebble Beach, Pigeon Point, New Year's Point and the Steele and Dickerman ranches on the extreme southern border of San Mateo County. R. S. Thornton is President of the company, K. J. Willats Secretary, and Frederick Homer Chief Engineer.

Electric Railroad Construction.

Auburn, N. Y.—It is proposed to build an electric road from the town line between Aurelius and Auburn, along the Genesee turnpike to Cayuga. Robert E. Drake is securing the consent of the property owners along the route, and is working in the interests of Clifford B. Beebe and William C. Gray, Jr.

Bradford, Pa.—Three-fourths of the capital required has been subscribed to build an electric road from Olean, N. Y., to Bradford, Pa., a distance of about 15 miles. George Forbes and F. L. Bartlett, of Olean, are interested in the project.

Bristol, R. I.—A petition will be presented to the Town Council asking for the privilege to erect a power station and build an electric road by the Bristol Land & Improvement Co.

Brockton, Mass.—The capacity of the plant of the Brockton Street Railway Co. will be nearly doubled at a cost of nearly $60,000. Stone & Webster, engineers of Boston, have charge of the electrical work.

Charleston, S. C.—President Passailaigue, of the Enterprise Street Railroad, has petitioned for a right of way through Broad street from East Bay up to City Hall in Charleston.

Conway, Mass.—An electric road is being built across the Deerfield River near Conway station.

Hagerstown, Md.—On Sept. 11 the Hagerstown Railway Co. began work on the Fairground avenue extension.

Marietta, O.—The Marietta Electric Co., which was recently incorporated, will be built by local capital. Surveys have been completed and the buildings will be commenced at once. The grading and trackslaying and other work will be done entirely by the company; 60-lb. T-rails will be used, the track will be of standard gage. The power-house will be equipped with one 500-volt D. C. and one 2,000-volt A. C. dynamos and two 135-H. P. gas engines. Contracts for the machinery and track material were let the last of August.

Mt. Vernon, N. Y.—It is stated that the North Mt. Vernon Railway Co. is planning to build an electric road from Mt. Vernon along North street and Wingate avenue to White Plains.

Napa, Cal.—We are informed that N. W. Griswold and J. F. Byxbee will apply to the Napa County Board of Supervisors for a franchise to build and operate an electric railroad in the county. They already have a franchise in Sonoma County.

Newton, Mass.—The Wellesley & Boston Street Railway Co. has securrd a franchise to build an electric road on Washington street in West Newton parallel with the tracks of the Newton Street Railway Co. The franchise provides for a 5-cent fare over the entire length of its line, from Newton to the Wellesley line at Newton Lower Falls, and stipulates that through cars must be run for a single fare of 5 cents between Newton and Newton Upper Falls, and between Newton Centre and Newton; also between Newton Upper Falls and Watertown.

Norristown, Pa.—The Union Traction Co., of Philadelphia, has been requested by the citizens of Montgomery County to extend its line from the terminus of Chestnut Hill to St. Joseph's Convent, a distance of less than a mile, and thus make a connection with the Norristown and Chestnut Hill line.

Pittsburgh, Pa.—The Consolidated Traction Co. is preparing to make some changes on the Sharpsburg Branch of its road.

Rockford, Ill.—At the meeting of the city council on Sept. 8 the Mayor vetoed the franchise given to the Rockford Traction Co. on Seventh street at the last meeting. The matter of reconsideration and passage over the veto was laid over until the next meeting.

St. Louis.—The capital stock of the St. Louis & Belleville Rapid Transit Co., which was incorporated Sept. 3, is $300,000. Among the Directors are: President, George Silsby; Vice-President, Daniel P. Alexander; Treasurer, Wm. F. Stevens; Secretary, George H. Welton; Auditor, John H. MacDonald, and Daniel P. Alexander, of East St. Louis.

San Diego, Cal.—George D. Goldman, City Clerk of San Diego, will receive bids until Sept. 28 for a two-year franchise to operate an electric street railroad in San Diego.

Tacoma, Wash.—The Tacoma & American Lake Railway Co. has petitioned for a franchise to build a single track electric line in Tacoma. The surveys, which have been completed, provide for a grade of but 4½ per cent. Robert Wingate, the principal owner, states that they will be able to have the road in operation within three months after the franchise is granted.

Troy, N. Y.—The new shed for the Troy City Railroad Co. is nearly completed. The mason work is being done by Contractor Robert T. Carey, and the carpenter work by E. W. Martin & Son.

Vancouver, B. C.—The City Council has approved the route of the proposed road to be built by the Vancouver & Victoria Eastern Railway & Navigation Co., and will request the government to grant financial assistance toward the construction of the road.

Walkerton, Ont.—Mr. A. Brunel, Engineer of the Huron & Ontario Electric Railroad, has presented his report, which states that a number of waterfalls are to be utilized for power purposes on the new road and the Saugun and other streams will be bridged.

Westminster, Mass.—It is stated that subscriptions to the amount of $80,000 have been made toward the stock of a proposed electric road 10 miles in length to connect Fitchburgh, Westminster and Gardner. The capital stock is to be $100,000.

Wilmington, Del.—All of the grading has been done on the five miles of electric railroad now being constructed between New Castle and Wilmington, and the work of laying the rails was begun this week. The road will probably be completed within a few weeks.

Worcester, Mass.—The directors of the Worcester & Marlboro Street Railway Co. have accepted the terms of the decree recently offered to them by the Board of Aldermen and work will be commenced before November. Franchises have been given to Westboro, Northboro, Shrewsbury and Worcester to the new company.

Youngstown, N. Y.—The Youngstown Frontier Railroad Co. began to carry freight over its line on Sept. 11. The tracks of the railroad company connect with the tracks of the Niagara Falls & Lewistown Railroad Co., at Lewistown, and arrangements have been made for running through cars on each line. The former road was

recently completed. The managements of the road, however, are entirely separate and distinct, no stock being held on both roads by the same person.

GENERAL RAILROAD NEWS.

Chicago Great Western.—The company is said to have secured a loan in Europe for the purpose of carrying out the schemes of the road in conjunction with the Iowa Development Co. and the Anglo-American Grain and Provision Co. It is the intention to erect a series of elevators, the first of which is in process of construction at Kansas City. One each, it is claimed, will be built at St. Joseph, Omaha, Leavenworth, Topeka and Minneapolis, with two terminals at St. Paul, one at Buffalo and one probably at Liverpool.

Chicago, Indiana & Eastern.—G. B. Swetzer, Receiver of the road, has indefinitely suspended the operation of the road, which has been running at a loss. He has asked for a court order to sell the rolling stock and pay pressing claims.

Chicago Junction Railway & Union Stock Yards Co.—The annual report shows a decrease of $26 712 in the net earnings as compared with the previous year. The gross earnings were $87,704 heavier, but this was overcome by an increase in the operating expenses. The fiscal year ended July 30, and the figures compare with 1895 as follows:

	1896.	1895.
Gross earn	$3 34',263	$3 354,559
Oper. exp	1.361,830	1,251,412
Net earn	$2,080,433	$2,103,146

Included in the above are miscellaneous earnings derived from the rent of stores, tenements, etc., which in the last fiscal year amounted to $63,296.

Columbus, Hocking Valley & Toledo.—The stockholders at a special meeting at Columbus, O., authorized the issuing of $30,000,000 in bonds to replace existing bonded indebtedness and cover outstanding indebtedness, the bonds to be secured by a general mortgage covering all the property of the company.

Columbus Southern.—The foreclosure sale of the road, which was to take place Sept. 10, has been post poned on the request of some of the bondholders.

Detroit, Lansing & Northern.—The sale under a mortgage of this road and the Grand Rapids, Lansing & Detroit is advertised for Oct. 20. It is understood that thereafter the lines will be known as the Detroit, Grand Rapids & Western.

Duluth Transfer.—Suit has been begun by the Metropolitan Trust Co., of New York, against this company to compel the payment of $35,490 due as interest money Jan. 1, 1896, on the mortgage held by that corporation on the property of the railway company. A receiver has been applied for, and it is asked that the property and franchise of the road be sold under a final judgment of the court.

Great Northern.—The earnings for August and since June 3 are as follows:

August:	1896.	1895.	Inc. or dec.
St. P., M. & M. leased lines	$1,368,369	$1,186,669	I. $182 300
Eastern Ry. of Minn	174,740	133,450	I. 41,296
Montana Central Ry	167,186	116,684	I. 50,496
Total for system	$1,710,297	$1,436,210	I. $274,087
Two months.			
St. P., M. & M. leased lines	$2,738,939	$2,376,280	I. $362,659
Eastern Ry. of Minn	336,656	249,808	I. 86,848
Montana Central Ry	335,412	231,538	I. 103,874
Total for system	$3,411,007	$2,857,625	I. $553,382

Illinois Central.—The statement of income from traffic for July shows gross receipts of $1,649,594, against $1,508,656 last year, an increase of $140,938; operating expenses and taxes, $1,323,278, against $1,104,951 last year, an increase of $218,327; excess of receipts over operating expenses and taxes, last year, $326,316; this year, $403,705; decrease, $77,389; gross receipts for August (estimated), $1,678,326, an increase over 1895 of $38,259. There was an increase in mileage between July, 1895, and July, 1896, of 239 miles.

Nashville, Chattanooga & St. Louis.—The directors met at Nashville last week, and ratified the lease of the Paducah, Tennessee & Alabama and the Tennessee Midland railroads. The stockholders also met, but adjourned for 90 days without acting upon the leasing of the two roads mentioned.

Norfolk & Western.—The property of the company, except the Maryland & Washington and the Lynchburg & Durham roads, was sold at Norfolk, Va., Sept. 15, by virtue of an order of the United States Court, under foreclosure. It was sold to George Coppell, J. Kennedy Tod, Victor Morawetz and W. E. Glyn, of New York, who represent the Reorganization Committee of the bondholders. There was only one bid, $3,000,000, the minimum fixed by the Court.

New York, New Haven & Hartford.—A general statement for the year ending June 30, published this week, shows gross earnings from operation $30,345,630; operating expenses, $21,137,226. The total income of the road (including $855,685 from miscellaneous sources), is given as $10,064,089; deduction for taxes, interest and rentals, $6,397,197; dividends (8 per cent.), $3,608,542; surplus for the 12 months, $58,350. The figures show an increase of $2,443,889 over the earnings of the year ending June 30, 1895. The capital stock is now $47,745,700. The statement says that the demoralized condition of the money market has delayed progress on the Boston terminal, but that it is hoped to complete the work during the year 1897.

Northern Pacific.—The new company has notified a large number of corporations that the contracts existing between them and the old Northern Pacific will not be assumed by the present corporation Among the leases and contracts involved are the following, which the re-organized Northern Pacific declines to assume: Montana Improvement Co., Limited, July 2. 1893; German-American Trust Co., Aug. 27, 1891, Aug. 28, 1891: American Surety Co., Dec. 9, 1891: Eastern Railway Company of Minnesota, May 15, 1889; Milwaukee, Lake Shore & Western Railway Co. and Wisconsin Central Co., June 23, 1891. The use of the tracks of the Great Northern, between St. Paul and Minneapolis, has already been abandoned, and it is understood that the Great Northern will bring suit to prove that the present Northern Pacific company is bound by the contracts of the old company.

Oregon Railway & Navigation Co.—The income account of the company for the year ending June 30, 1896, shows: Gross earnings, $4,340,790; operating expenses, $2,776,503; net earnings, $1,564,287; taxes, $165,015; other income, $27,429; and rentals, $195,828, leaving a balance of $1,230,873. The fixed charges of the company since re-organization are about $930,000 per annum, and consequently there is a surplus for the preferred stockholders. This surplus, however, it has been decided to spend upon extraordinary betterments as opportunity occurs. Gross and net earnings make the following comparison with previous years (taxes included in operating expenses):

	Gross.	Net.
1893-4	$3,825,160	$445,350
1894-5	5,027,332	1,698,837
1895-6	4,340,790	1,399,272

Toledo, Peoria & Western.—The annual report of the company for the year ended June 30 follows:

	1896.	Changes.
Gross earn	$1,010,269	I. $57,031
Oper. exp	739,481	I. 7,338
Net earn	$220,788	I. $49,694
Fixed charges	211,700	I. 9,210
Surplus	$9,089	I. $40,484

The expenditures on account of maintenance of way and structures were $214,880, an increase of $18,202 over the previous year. Over 500 tons of steel rails were laid and a large amount of work was done in improving the property. The only material change in the balance sheet appears in the item of bills payable for additional equipment, $297,190 representing notes, for the purchase of 500 box cars, 50 coal cars and 2 locomotives. Passengers carried numbered 476,682, rate 2.38; tons carried, 729,628, rate 1 21. Net earnings per mile were $1,060, the largest with one exception since 1888. The largest percentage of tonnage was grain, 45.31 with coal second, 17.10. The deficit of income account at the close of the year was $206,110. The floating debt, with the exception of bills payable for new equipment, is insignificant.

Electric Railroad News.

Albany, N. Y.—Below is a comparison of reports of the Albany Railway Co. for the year ending June 30, 1896, and June 30, 1895:

	1896.	1895.
Gross earnings from operation	$536.926	$490,061
Operating expenses	342,568	321,652
Other income	5,446	6,728
Fixed charges	81,849	95,430
Net income	117,995	79,708
Dividend, 6 per cent	81,843	75,000
Surplus paid for the year	36,213	4.707
Deficit up to June 30, 1895	.....	16,767
Total surplus to June 30, 1896	19,446	.....
Improvements during the year	153,625	69,861
Cash on hand	3,780	25,189
Number of passengers carried	9,511,556	8,958,361
Average number of employees	489	325
Total number of miles traveled by cars	2,2?9,977	.....

Cincinnati, O.—The Cincinnati Street Railway Co. will pay its quarterly dividend of 1¼ per cent. on Oct. 1, 1896. The directors have made a call upon the stockholders for $500,000 of capital stock, to be apportioned to the stockholders in proportion to their respective holdings, as shown by the books of the company.

Columbus, O.—The Columbus Central Railway Co., was placed in the hands of a Receiver on Sept. 4. George H. Worthington, of Cleveland, being appointed. The liabilities are $1,850,194, of which $1,500.000 is bonded indebtedness. The balance is in notes and open accounts.

Fort Wayne, Ind.—John H. Buss and M. S. Robison have been appointed Receivers for the Consolidated Electric Railway Co., of Fort Wayne. The application for receivership was made by F. De H. Robison, of Cleveland, one of the principal stockholders; the Deguon Construction Co. and a syndicate of Cleveland bankers. The plant is worth $2,000,000, and its bonded indebtedness is $1,500,000.

Houston, Tex.—We are informed by A. H. Hayward of the Houston City Street Railroad Co., that the Houston Electric Street Railway, which was mentioned in our construction notes Aug. 7, is a new corporation which has been formed to purchase and operate the line of the Houston City Co., which has been in the hands of a Receiver for the past year.

Philadelphia, Pa.—The report of the Union Traction Co for the fiscal year ending June 30, 1896, covering nine months of business, shows a capital stock of $5,986,090, divided among 2,980 shareholders. $3,786,390 has been advanced to the Philadelphia Traction Co. for the completion of its system; $883,663 has been spent in construction and equipment, and a balance of $1,400,449 in cash is reported as on hand June 30, 1896. Of this amount, however, about $1,100,000 is reserved to meet fixed charges and taxes accrued at that time, but not then due. The income account gives:

Gross earnings from operation (Philadelphia Traction system only)	$1,279,683
Less operating expenses	2,256,896
Net earnings from operation	$2.022.187
Dividends	1,242,278
Gross income from all sources	3,293 469
Deduction from income	3,342,763
Deficit	$49.293

The report shows the operating cost to be 59.78 per cent. including taxes, the taxes being at the rate of 7.04 per cent. of gross earnings All the expenses incident to the strike were charged to operation.

Springfield, Mass.—The stockholders of the Springfield Street Railway Co. will apply to the Railroad Commissioners for authority to issue a $200,000 increase of stock, which will make the total capitalization $1,200,000. The reason for this increase is that the expenses of recent extensions and of those on lines for which the company has franchises may be met.

TRAFFIC.

Traffic Notes.

The California Traffic Association, the freight bureau of the San Francisco merchants, has been dissolved.

San Francisco papers report important reductions in freight rates from San Francisco to Lathrop and points beyond where the Southern Pacific and the San Francisco & San Joaquin Valley roads are competitors.

The Queen City, the largest freight carrier on the Great Lakes, has again broken her own record by taking from Duluth 156,000 bushels of wheat, or 5,148 net tons. This is several hundred tons greater than any grain cargo ever carried out of Lake Superior.

The Joint Traffic Managers have decided to continue in force until Sept. 21 the 15-cent rate on corn from the West, and a meeting of the traffic officials of the roads in Central territory will be held to decide whether it is advisable to restore the 20-cent rate at all.

The Alabama State Railroad Commission has refused the petition of several railroads in that State to allow a moderate increase in freight rates. The Commission insists that the prevailing low price of all commodities and the demoralization attending every branch of business renders the advance unreasonable.

The North Carolina Railroad Commission has ordered that the passenger rates on all railroads in that state shall be, from Sept. 24: First-class, 3 cents a mile; second-class, 2½ cents. The rates on the "small lines" must be readjusted in like proportion to conform to this order, it being a reduction of one fourth (¼) cent per mile for each rate. All persons interested will be heard as to the reasonableness of these rates on Sept. 22.

The New England Passenger Association, in which are represented all the important railroads in New England, has voted to reduce the rates for carrying bicycles in baggage cars, beginning Oct. 1. Where the ticket rate is less than 75 cents the charge for a bicycle will be 10 cents; and Mr. Elliott, Chief Consul of the League of American Wheelmen, says that over 80 per cent. of the bicycle business comes within this limit. The rates for longer distances are graduated according to the fares, the rate for a bicycle with a $10 ticket being $1.

Grain receipts at the port of Duluth for the crop year which ended Sept. 1 have been far in excess of those of any preceding year. Wheat receipts were 65,500,000 bushels, in round figures, against 33,702,000 the preceding year and 51,355,000 for the greatest year before that. Flax receipts were 5,500,000 bushels, against 1,858,000 for the entire four years before. Barley receipts were 4,500,000, against about 3,000,000 for all preceding years. Oats receipts were 4,000,000, against 1,500,000 in the past four years. With receipts of flour reduced to grain the total business of the port for the year exceeds by considerable 100,000,000 bushels.

A report to the St. Louis *Globe-Democrat* states that in consequence of the injunction secured against rate-cutting in the southeastern territory by the Wholesale Grocers' Association of Augusta, the Southeastern Mississippi Valley Rate Committee has stopped work on its new tariff. Nothing will be done now except to await the result of the injunction proceedings The members of the committee view the action of the Wholesale Grocers' Association with great satisfaction. It is their hope that a permanent injunction against rate-cutting will be granted. The effect of the Eastern rate cutting is already felt in the Middle South, and there was a prospect that it would extend into New Orleans territory.

Chicago Traffic Matters.

CHICAGO, Sept. 16, 1896.

The Chicago-St. Paul lines have decided to bring the rate war to a close, and on Oct. 1 will make the rates, Chicago to St. Paul, the same as those in effect before the Ferry Line began its cutting about six weeks ago, viz: First, 60; second, 50; third, 40; fourth, 25; fifth, 20; A, 25; B, 20; C, 17; D. 14; E, 13. According to the agreement, the rail lines allow the Ferry differentials of 1½ cents on the higher classes and one cent on the lower classes, and the Ferry consents to recognize a differential of three cents for the Lake Michigan and Lake Superior Transportation Company.

During the last few days five or six of the larger lake vessels have found it impossible to navigate the Chicago River to the grain elevators to load and have been forced to go to the deep-water port of South Chicago. None of the large vessels recently put in service can use the Chicago River. It is believed that the river will before long be entirely abandoned unless the channels are materially deepened by the work now being carried on. Even this will hardly prevent South Chicago from becoming the future receiving and shipping point for grain and ore.

General Passenger Agents of the Chicago-St. Paul roads have been quareling among themselves for several days over the payment of ticket commissions on Grand Army business. By an agreement entered into last July no commissions whatever were to be paid on this business. It now develops that this agreement was flagrantly violated by nearly every line. As a result nearly every road has given notice that commissions, averaging 75 cents, will be paid wherever the same were promised, which practically means everywhere.

The Eastern and Western roads at Chicago have had a little disturbance over return portions of Grand Army tickets coming to the Eastern lines unstamped by the joint agent at St. Paul. On account of the immense crowd, the joint agent notified all roads that it would be impossible for him to stamp all tickets. The Eastern roads say they received no such notice and they refused to honor the unstamped return portions. So strict were some of the lines in adhering to the agreement that some passengers were put off from Eastbound trains. It is also reported that the New York, Ontario & Western stocked the St. Paul scalpers with return tickets to New York.

Officers of the Chicago & Northern Pacific road say that the flat 5-cent fare between all suburban stations, put in effect last June, has had the effect of increasing the regular daily suburban business 60 per cent., and the Sunday traffic 80 per cent. Just how much the earnings have increased cannot yet be learned. The officers of the company say they are satisfied with the experiment and that the 5-cent rate will never be advanced.

Total shipments to the East by lake last week amounted to 115,088 tons, of which 105,712 tons were grain. Total all-rail shipments were 61,846 tons, compared with 61,995 tons for the preceding week, a decrease of 549 tons, and against 60,900 tons for the corresponding week of last year. The all-rail traffic was carried as follows:

Roads.	WEEK TO SEPT. 12.		WEEK TO SEPT. 5.	
	Tons.	p. c.	Tons.	p. c.
Michigan Central	7,098	11.5	7,382	11.2
Wabash	6,546	10.6	6,698	10.8
L. S. & M. S.	9,409	13.1	8,338	13.7
Pitts., Ft. Wayne & Chicago	6,174	10.0	6,492	11.9
Baltimore & Ohio	5 928	9.6	6,067	9.6
Pitts., Cin., Chi. & St. Louis	4,685	7.6	5,883	8.6
Grand Trunk	7,145	11.6	6,285	10.3
N. Y. C. & St. L	6,177	10.0	6,222	10.8
Erie	5,766	9.3	5,596	8.5
C., C., C. & St. Louis	2,918	4.7	3,032	4.6
Totals	61 846	100.0	61,995	100.0

Of the above shipments 24,778 tons were grain, 3,704 tons flour, 12,935 tons cured meats, 9,548 tons dressed beef, and 10,881 tons miscellaneous.